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June, 52 - May '59.

LIST OF SUBJECTS
in Arts and Sciences in which Research was
carried out in the Universities and
Research Institutions



June 1952 to May 1954.



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CONTENTS

UNIVERSITIES

	Page
Agra University	1-10
Aligarh University	11-19
Allahabad University	20-29
Annamalai University	30-38
Banaras University	39-46
Baroda University	47-49
Bombay University	50-79
Calcutta University	80-105
Ceylon University	106-145
Delhi University	146-152
Gauhati University	153
Gujarat University	154-158
Karnatak University	159-163
Madras University	164-185
Mysore University	186-192
Nagpur University	193-198
Osmania University	199-206
Panjab University	207-213
Poona University	214-215
Rajputana University	216-217
Saugar University	218-225
Travancore University	226-227
Utkal University	228-235
Visva-Bharati University	236-238

RESEARCH INSTITUTES

Bhandarkar Oriental Research Institute, Poona	..	241-243
Bose Institute, Calcutta	..	244-247
Central Building Research Institute, Roorkee, U.P.	..	248-250
Central Drug Research Institute, Lucknow	..	251-254
Central Glass and Ceramic Research Institute, Calcutta.		255-258
Central Leather Research Institute, Madras	..	259
Central Research Institute, Kasauli	..	260-262
Central Road Research Institute, Okhla, Delhi	..	263-265
Fuel Research Institute, Jealgora	..	266-278
Indian Agricultural Research Institute, New Delhi	..	279-286
Indian Institute of Philosophy, Amalner	..	287
Indian Institute of Science, Bangalore	..	288-311
Indian School of Mines and Applied Geology, Dhanbad.		312
Indian Statistical Institute, Calcutta	..	313-317
Institute of Nuclear Physics, Calcutta	..	318-319
National Chemical Laboratory, Poona	..	320-321
National Metallurgical Laboratory, Jamshedpur	..	322-323
Tata Institute of Fundamental Research, Bombay	..	324

AGRA

Arts—Economics

D. Litt.

- S. P. Dhondyal, Farms Organisation in India, begun in 1949.
Mahendra Prasad, Finance of Social Security in an underdeveloped economy with special reference to India, begun in 1952.
Awadh Behari Misra, Absenteeism among Industrial workers in India, begun in 1952.
Chaitanya Swarup, Philosophical and Scientific Foundations of Economic Science, begun in 1954.

Ph. D.

- Kanaya Lal Widhani, Developing Rural and Agricultural India in the present Economic set up, begun in 1953.
Satish Chandra Gupta, Regional Food Planning for India, begun in 1953.
Innocent Roi Mark, The State in relation to the working class in India, begun in 1953.
Sugan Chand Tela, Co-operative movement in the State of Rajasthan, begun in 1953.
R. N. Sharma, Economic conditions in the State of Ajmer, begun in 1953.
B. N. Mehrotra, Economics of Sugar production in U.P. and Bihar with special reference to its cost structure, begun in 1953.
Chandra Bhan, Milk supply in Uttar Pradesh with reference to that in U.S.A., England and Western Europe, begun in 1953.
S. Ashfaq Ali, Economic development of Bhopal State (1901-1952), begun in 1953.
D. K. Mendevel, Trends of Population, Employment, Agricultural and Social standards in the Rapti Valley, begun in 1953.
R. P. Saksena, Tribal economy in Madhya Bharat, begun in 1953.
H. P. Shahi, Land Utilization and population in Gorakhpur Division, begun in 1953.
L. C. Sharma, Forest Industry in U.P., begun in 1953.
A. B. Bhattacharya, Leather Industry in Agra District with special reference to skilled labour and Post-partition problems, begun in 1953.
R. C. Dwivedi, The working of Community Projects in U.P. with special reference to Pilot Project in Etawah, begun in 1953.
Smt. C. M. Mathur, Economic Planning, Theory & Practice with special referent to India, begun in 1953.
Km. Santosh Kehar, Dairy Industry in India, begun in 1953.
Khushi Ram Varshney, Rural Economics in Meerut Division, begun in 1953.
Smt. Lakshmi Natarajan, Indian Labour in Ceylon, begun in 1953.
Vishnu Datt Nagar, Rural Unemployment in Madhya Bharat & Bhopal, begun in 1953.
Chandrama Lal, Economic conditions of landless labourers in Eastern U.P. with special reference to Gorakhpur District, begun in 1953.
Jageshwar Saran Saxena, Labour in Indian Railways, begun in 1953.

- Surendra Kumar Misra, Socio-Economic aspects of Damoder Valley Project, begun in 1954.
- Kedar Nath Tewari, Indian Banking, its tendencies and Development since 1939-53, 1954.
- N. K. Bhatnagar, Public Debt in India since 1930, 1954.
- Brij Mohan Saxena, Human Relation in Textile Industry of Uttar Pradesh, begun in 1954.
- Gayan Chand Agarwal, Social insurance in India, begun in 1954.
- Shyam Bahadur Kudasi, Application of Keynesian Economics to Indian conditions, begun in 1954.
- Kishan Prasad Mathur, India's Foreign Trade (1900-1954), begun in 1954.
- Jagdish Narain Tripathi, Economic incentives for Textile workers, begun in 1954.
- Shiva Nand Jha, A Critical study of Gandhian Economic Thought, begun in 1954.
- Ram Chandra Lal Asthana, Socio-Economic Consequences of abolition of Zamindari in U.P., begun in 1954.

English

D. Litt.

- C. N. Desai, Types of English Dramatic Comedy, begun in 1950.

Ph. D.

- Mewa Lal Khare, Sri Aurobindo—The Poet and Thinker, begun in 1952.
- A. K. Chaturvedi, The Poetry of Christina Rossetti—a study of the formative influences upon its critical survey, begun in 1953.
- J. B. Singh, A critical analysis of Shelly's Imagery and a re-valuation of his poetic art, begun in 1953.
- S. K. Dhawan, D. H. Lawrence—a study of his life and thought, begun in 1953.
- V. N. Pandey, Mystic elements in English Poetry (between 1780-1822), begun in 1953.
- W. P. Dias, Play of sex in Shakespearean Tragedy, begun in 1953.
- H. C. Jain, Art, Religion & Morality in the Poetry of A. C. Swinburne, begun in 1953.
- R. K. Bansal, A study of Walter De-la Mare, begun in 1953.
- V. N. Shivhare, Noel Coward as a Dramatist of Social Morals between the Wars, begun in 1953.
- Bhagwant Singh, Poetry of W. E. Henley, begun in 1953.
- Kripalu Sheel, The treatment of war in English Poetry, (1850-1950), begun in 1953.
- Kashi Nath Bakaya, A critical study of the Dramatic Monologue in Victorian Poetry with special reference to the works of Tennyson and Browning, begun in 1953.
- Gyan Swarup Gupta, A critical study of the novels of Galsworthy, begun in 1953.
- Man Mohan Saxena, A Study of Rudyard Kipling's Fictions with special reference to his craftsmanship, begun in 1953.
- Dharma Raj, English Dramatic Tragedy (1900-1950), begun in 1954.
- Surendra Dayal Singh, Synge, the realist : A critical study of his dramas, begun in 1954.

Geography

Ph. D.

- D. P. Saksena, Ancient Indian Geography, begun in 1953.
 L. K. Shukla, The Regional Geography of Gomti valley, begun in 1953.
 Y. D. Pandey, Economic and Regional Geography of Kumaon, begun in 1953.
 Mahatma Singh, Land Utilisation in North East U.P. (including the district of Deoria, Gorakhpur and Basti), begun in 1953.
 Raj Bahadur Saxena, The Geographical Factor in the location of Large Scale Industries in U.P., begun in 1953.
 Marrel Christopher, The Habitant Economy and Society of Christian villages in the U.P., begun in 1954.
 Mahesh Narain Nigam, The Urban Geography of Lucknow, begun in 1954.
 Lal Singh, Urban Geography of Agra, begun in 1954.

Hindi

D. Litt.

- Smt. K. K. Gupta, Giti Kavya and Krishna Bhakti Shakha, begun in 1950.
 Gauri Shanker, Folk-lore in Prem Gathas and Bhakti Poetry of Medieval Hindi Literature, begun in 1950.
 J. D. Kulshrestha, Islamic contribution to Hindi Literature, begun in 1952.
 G. S. Trigunayat, Hindi ki Nirgun Kavya Dhara aur Uski Darshnik Prasthi-Bhoomi, begun in 1952.
 Munshi Lal, Vedic Bhakti aur Madhya Kaleem Hindi Sahitya men Uski Abhivyakti, begun in 1952.
 O. P. Kulshrestha, Bhakti Sampradaya tatha Madhya Kaleen Hindi Kavya, begun in 1952.
 Bhagwat Swarup Misra, Psycho-Historical Study of Fundamentals of criticism & critical consciousness in Hindi Literature, begun in 1953.
 R. P. Chaturvedi, Odhunik Kavita ki Mool Prernayen, begun in 1953.
 Dr. Ramdat Bharadwaj, A critique of the Home & Date and Place of birth of Tulsi Das with special reference to the life and works of his wife Ratnawali and the identity and History of Sukaraksetra, begun in 1954.
 D. Prem Narain Shukla, Bhakta Kalin Hindi Sant Sahitya ki Bhasha (Samvat 1875 to 1700 Vikran), begun in 1954.
 D. Birendra Kumar Shukla, Bharitya Natya Parampara tatha Hindi Natak, begun in 1954.

Ph. D.

- Ganesh Datt, The Society as reflected in Medieval Hindi Literature, begun in 1950.
 Prabhakar Balwant Machwe, Hindi Aur Marathi Ka Nirgun Sant Kavya, begun in 1952.
 Sita Ram Kapoor, Literary Sources of the Ram Charit Manas—a study, begun in 1952.
 Mahesh Chand Sehgal, Sant Sunder Dass, begun in 1952.

- Barsanelal Chaturvedi, Hindi Sahitya Men Hasya Ras, begun in 1952.
- Nathan Singh, Balmukand Gupta—Unke Jeevan aur Sahitya Ka Addhyayan, begun in 1953.
- R. S. Tripathi, Muktak Kavya Parampara Ke antargat Behari Satsai ka addhyayan, begun in 1953.
- S. P. Goyal, Hindi men Khand Kavya, begun in 1953.
- V. N. Gaur, Arhunik Hindi Kavya men Rahasyavad, begun in 1953.
- R. D. Awasthy, Shabd Shakti, begun in 1953.
- Shatrughna Bhargava, Krishna Kavya Men Bhartiya Sanskrit tatha Samaj ka Chitran, begun in 1953.
- Smt. S. D. Kulsreshtha, Krishna Lore in Hindi literature of Medieval period (1500-1800), begun in 1953.
- R. N. Bhargava, Hindi men Ram Kavya Ka Vikas, begun in 1953.
- V. B. Misra, Chaitanya Sampradaya ke Hindi Kavi aur is Sampradaya ka anya Hindi Kaviyon par prabhaw, begun in 1953.
- D. R. Singh, Tulsi ki Kavya Sadhana, begun in 1953.
- Rajendra Kumar, Siddhon Ki Vichardhara aur Hindi par uska Prabhaw, begun in 1953.
- R. C. Rangra, Development of characterization in Hindi Novels, begun in 1953.
- V. S. Yaduwanshi, Biographical and Critical Study of Keshaydas as an Acharya and as a poet, begun in 1953.
- R. S. Yadava, Yog Darshan aur Hindi Kavya Dhara, begun in 1953.
- S. N. Shukla, Hindi Sahitya ke adhar par Bhartiya Sanskriti (1500-1700), begun in 1953.
- Ram Chandra, Hindi ki Swachhandwadi Kavya parampara ka Prārambha aur Pt. Sridhar Pathak Ki kritiyon ka anusheelan, begun in 1953.
- S. N. Agnihotri, Hindi Upanyas ka Shastriya Vivechan, begun in 1953.
- R. S. Sharma, Tulsi aur Bhartiya Sanskriti, begun in 1953.
- J. C. Rai, Acharya Ram Chandra Shukla, Ek Adhyayan, begun in 1953.
- Chhotey Lal, Meera Bai, begun in 1953.
- R. P. Sharma, Pt. Balkrishna Bhatt, unka Jiwan aur Sahitya, begun in 1953.
- N. D. Sharma, Nimbark Sampradaya aur uske Krishna Bhakt Kavi, begun in 1953.
- S. M. Dwivedi, Bhikharidas,—Vyaktatva, aur Kritatva, begun in 1953.
- M. P. Shukla, Kannauji Lok Varta Sahitya, begun in 1953.
- N. K. Singh, Hindi Kavya Men Uplabdha Etahasik Samigri Ka Vivechan, (arambhik kal se 19vin Sadi tak), begun in 1953.
- S. L. Joshi, Riti Kalcem Sahitya Ki Etahasik Prashtibhoomi, begun in 1953.
- Bhagwati Prasad Sharma, Braj Bhasha Gadya Ka Vikas, begun in 1953.
- Raj Narain Misra, Sanskrit Ki Sahityak Aur Sanskritik parampara ki Hindi vangmayi ko Den Aur Iska Naw Nirman, begun in 1953.
- Dwaraka Prasad, Kamayani Men kavya, Sanskriti Aur Darshan, begun in 1953.
- Jang Bahadur Misra, Hindi men Prem kathanakon ki kavya Parampara, begun in 1953.
- Km. Sarla Sachdev, Adhunik Hindi Sahitya men Nari, begun in 1953.
- Amba Prasad Suman, Krishak Jiwan Sambandhi Shabdawali (Aligarh kshetra ki Koli Par adharit), begun in 1953.
- Smt. Kusum Kanta Sharma, A study of Padam Singh Sharma, begun in 1953.

- Smt. Chandra Rani Singh, *Ritikal Men Nari-chitran*, begun in 1953.
- Brij Lal Verma, *A study of Rajjabji with special reference to Sant Sahitya*, begun in 1953.
- Shiv Lal Joshi, *Riti kaleen Sahitya ki Etahasik Prashtibhoomi*, begun in 1953.
- Badri Prasad Parmar, *A study of Malwi Folk literature*, begun in 1954.
- Smt. Shanta Gattani, *Hindi Sahitya men Neeti Aur Lok Dharam*, begun in 1954.
- Ram Datta Sharma, *Ayodhya Singh Upadhyaya : Kavya Kala Aur Achar-yatwa*, begun in 1954.
- Vishwa Nath Shukla, *Prasad Ke Natakon ki Aitihasik Prishthabhumi*, begun in 1954.
- Shripati Sharma Tripathi, *Hindi Natakon par Pashchatya Prabhav*, begun in 1954.
- Din Bandhu Trivedi, *Sur Sahitya ki Bhasa*, begun in 1954.
- Amba Datt Pant, *Apbhransha Kavya parampara tatha vidyāpati*, begun in 1954.
- Smt. Shanta Devi, *Hindi Vaishnava Kavya Men Karuna Bhavna*, begun in 1954.
- Nanak Saran Nigam, *Phonetic Research of Hindi Language*, begun in 1954.
- Shive Shankar Sharma, *Hindi Sahitya men Soofi Kavya Dhara*, begun in 1954.
- Bhagwati Prasad Shukla, *Bagheli Lok Sahitya ka Adhyayan*, begun in 1954.
- Harish Chandra, *Pictorial art in Chhayawad with special reference to Prasad's work*, begun in 1954.
- Shyamsundar Yadavram Vyas, *Hindi Mahakavyon men Nari Chitran*, begun in 1954.
- Shridhar Dikshit, *Tulsi ke pascehat Ram Kavya Ka Vikas*, begun in 1954.
- Prem Prakash Gautam, *Ancient Hindi Prose excluding Brij Bhasha prose upto Bhartendu Harish Chander*, begun in 1954.

History

D. Litt.

- S. A. A. Rizvi, *Muslim Revivalist Movements in Northern India in 16th and 17th Centuries*, begun in 1952.

Ph. D.

- M. L. Vidyarthi, *Main trends of Indian Culture from 1772-1856*, begun in 1950.
- Moti Chand Jain, *Administration of Lord Hastings (1813-23)*, begun in 1952.
- Smt. Shyama Kumari Joshi, *The centralization of Authority in India, 1838-1861*, begun in 1952.
- P. D. Pathak, *Pre-Mutiny Afghan Policy of the British in India*, begun in 1953.
- B. L. N. R. Luniya, *Architecture in Madhya Bharat*, begun in 1953.
- Mahendrapati Yadav, *The Administration of Lord Curzon*, begun in 1953.
- Sushil Kumar Srivastava, *Akbar's relations with Deccan*, begun in 1954.
- Kundan Lal Sharma, *Political relations of the East India Co., with Indian States under Sir John Shore*, begun in 1954.

Triloki Nath, Post-Mutiny Settlement in India (1858-1870), begun in 1954.
 Purshotam Lal Saxena, Life and times of Raja Chhatrasal Bundela with special reference to the disintegration of the Mughal Authority in C.I., begun in 1954.

Philosophy

Ph. D.

H. L. Maheswari, Philosophy of Swami Ram Tirtha, begun in 1953.
 M. B. L. Khushdil, A critical study of the psychological basis of Basic Education with special reference to the principles of Gestalt Psychology of Learning, begun in 1953.
 Smt. Shakuntala Jain, A Comparative Study of the ethics of the Bhagwat Gita, Buddhism, Jainism and Gandhi, begun in 1954.

Political Science

D. Litt.

Shanti Prasad Varma, Anglo-Maratha relations 1772-1783, begun in 1952.
 Salig Ram Nigam, The Personnel System of the Government of India.

Ph. D.

Nitya Nand Sharma, Role of the Indian National Congress inside the Legislatures, 1924-39, begun in 1953.
 Suraj Bhan Sharma, Ethical connotations of citizenship, begun in 1953.
 R. B. S. Jain, Growth and working of the Governor General's Executive Council from 1858-1919, begun in 1953.
 V. N. Srivastava, Diarchy in action in the United Provinces of Agra & Oudh, 1921-37, begun in 1953.
 A. B. Srivastava, State Control over Municipalities since 1916, begun in 1953.
 Radha Mohan, Civic & Political Status of Indians in Burma, begun in 1954.
 Guru Prasad Mehrotra, Centralising tendencies in Modern Federations, begun in 1954.
 Satish Chandra Seth, The Growth of communalism in India and the Problem of Hindu-Muslim Relations, begun in 1954.
 Sachchidanand Tripathi, Working of the Municipal Boards in Uttar Pradesh with special reference to 'Kabul' Towns, begun in 1954.
 Smt. Kripal Sehgal, The upper chamber in Uttar Pradesh, begun in 1954.

Sanskrit

D. Litt

D. N. Shastri, The Nyaya Vaisesika Realm and its Conflict with the Buddhist Epistemology, begun in 1948.
 Bhola Nath Sharma, A critical and comparative study of Natya Shastra of Bharata and Poetics of Aristotle (based upon original texts in Greek & Sanskrit).
 Prabhakar Narain Kamthakar, Origin & Development of Fables in Sanskrit Literature (Historical & Philosophical), begun in 1954.

Dharmendra Nath, Legends in the Ramayana, begun in 1954.

Raj Kumar Jain, Pushpadant : Ek Adhyayan, begun in 1954.

Lakshman Swarup, Influence of Sanskrit Drama and Dramaturgy on Hindi Dramas, begun in 1954.

Sociology

D. Litt.

Virendra Varma, The U.P. Rural Reconstruction plans in the post-war period, begun in 1953.

Ph. D.

Ishwar Chandra, Social Economy of Himachal Pradesh, begun in 1953

Km. Kamala Gupta, Juvenile delinquency in U.P., begun in 1954.

Sadanand Mehta, Socio Geographical surveys of Tibet and Central Asia, begun in 1954.

Urdu

D. Litt.

Gyan Chand Jain, Evolution of Urdu. Masnavi in Northern India, begun in 1954.

Ph. D.

S. G. H. Rizvi, Hali ka Adbi Sarmaya, begun in 1951.

S. L. Hussain, Pt. Ratan Nath Sarshar and Urdu Literature, begun in 1952.

Mohd. Irfan, Qaim Chandpuri, begun in 1954.

Science

Botany

Ph. D.

Hari Prakash, Morphological studies in the *centrospermales*, begun in 1952.
J. C. Tandon, Anatomical studies of the Secondary Xylan of *leguminosae*, begun in 1953.

R. N. Dave, Studies in shoot apex of certain *Gymnosperms*, begun in 1953.

M. M. Lal, Morphological & anatomical studies in the order "*Myriales*", begun in 1953.

Satya Pal Singh, Morphological studies in some members of the family *Pedaliaceae*, begun in 1953.

Ajoy Kumar Banerjee, Leaf anatomy of some Indian Forest Trees with special reference to the season of Growth, begun in 1954.

Surendra Nath Chaturvedi, Studies on the effects of 2, 3, 5 tri-Iodohezoic acid on certain dicots, begun in 1954.

Ramji Sharma, Effects on Maleic Hydrazid on the growth and reproduction of certain weeds, begun in 1954.

Satindra Nath Bhardwaj, Physiological studies on Salt-tolerance in Wheat and Gram, begun in 1954.

Jagdish Sharan Gupta, Studies in the Protomycetales of India, begun in 1954.

Rudra Datt Shukla, Studies in Floral morphology of Burseraceae and Zygo-phylaceae, begun in 1954.

Chemistry

D. Sc.

- K. K. Baslas, Studies in the Constituents of some Indian Medicinal Plants, begun in 1951.
- Asharam Bhati, Studies in Essential oils and synthetic Terpenes, begun in 1954.

Ph. D.

- Wasant Raghunath Damle, Some plant resins, their constituents, begun in 1952.
- Newton Ram, Organic components of Agra soil and seasonal variations of the C/N ratio in relation to fungi growth and bacterial counts, begun in 1953.
- Jitendra Verma, Influence of Neutral Salts on molecular complexity, begun in 1953.
- S. S. A. Jeoffery, Studies on Sol-gel transformation of some metallic ferro and ferricyanides by physico-chemical methods, begun in 1953.
- Balak Ram Nagar, Humification of organic matter in relation to the physico-chemical properties of soil, begun in 1953.
- Sheo Das Verma, Studies on enzymic system, begun in 1953.
- Joseph George, The Bio-chemistry of Wood rotting fungi with particular reference to the plasticisation of wood, begun in 1953.
- G. Ram Chandra, Studies on chemical analysis of avian blood with special reference to mineral metabolism and Fecundity, begun in 1953.
- Jitendra Singh Chowdhury, Chemistry of wood of the following important Indian Timber Trees : (1) Shorea Robusta, (2) Melia Azedarche (3) Dalbergia Sissoo (4) Tectona Grandis, 1953.
- Nawin Chandra Sogani, Organo metallic compounds of analytical importance, begun in 1953.
- Janardan Singh Rawat, Effect of Induced Hypothoidism on metabolism and Enzyme activity, begun in 1953.
- Devendra Prasad Joshi, Application of Refractive index in Chemical Constitution, begun in 1954.
- J. S. Chaudhry, Chemistry of wood of the following two important Indian timber trees (1) Shorea Robusta (2) Melia Azedarach (3) Dalbergia Sissoo (4) Tectona Grandis, begun in 1954.
- Inder Raj Gambhir, Studies in the behaviour of reactive methylene compounds with reactive halogen compounds, begun in 1954.
- Hari Singh, Studies in Aromatic Hydroxyketones and some cyclizations of their derivatives, begun in 1954.

Mathematics

Ph. D.

- H. S. Sharma, Problem in Hydro-Dynamics, begun in 1950.
- J. P. Agarwal, Some Problems in Hydro-Dynamics, begun in 1950.
- Ram Kumar, Hankel Transform and self Reciprocal Functions, begun in 1953.
- D. N. Abrol, Sridharacharya and his work, begun in 1953.

G. P. Seth, Ballistics : (a) Internal Ballistics, and (b) External Ballistics, begun in 1953.

Har Datt Singh, Galactic Dynamics and Astrophysics with special reference to the following topics :—Theory of Spiral Nebulae : the Development of the Solar System and the study of Variable stars (*Cepheid* Variable), begun in 1953.

Suresh Chand Arya, Hydro-Dynamics, begun in 1953.

Physics

D. Sc.

Lakshman Singh, A study of the Solar System with special reference to the evolution of the Planetary Orbits, begun in 1951.

Ph. D.

R. S. Singh, Investigations on Light scattering and Raman spectra of some Organic Compounds and their Constitution, begun in 1947.

Krishna Damodar Abhyankar, Determination of temperature in various solar phenomena, such as Sunspots, prominences, flares, etc., by the method of Calcium Ionisation. (2) Photometric study of Balmer Discontinuity in the Solar Spectrum, begun in 1953.

Shyam Shanker Srivastava, Studies in Molecular Spectra Investigations, begun in 1953.

Baboo Lal Saraf, Investigation of decay schemes and the Jamma Continuum accompanying K-capture, its intensity, shape, maximum energy, its possible use in classification of K-capture transition, begun in 1954.

Zoology

D. Sc.

R. D. Saksena, A contribution to our knowledge of the Morphology and Histology of *Coleoptera*, begun in 1946.

Shyama Charan, Contribution to our knowledge of the Structure of the Placenta of *Felis Tigris*—The Indian Tiger, begun in 1949.

S. S. Saxena, Advanced Studies on Physiology, Morphology and Embryology of *Bagrada Picta*, begun in 1949.

Pranlad Narain Mathur, Anatomy and Physiology of the conducting system of the Vertebrate Heart, begun in 1954.

Ph. D.

S. S. Khanna, Studies on some Indian *curculion* *idea* (*Rhynchophorous Coleoptera*), begun in 1948.

K. J. Joseph, Taxonomy and Biology of fig insects, begun in 1953.

S. R. Deo Bhakta, Early embryology of *Mylabris pustulate*, begun in 1953.

Vinai Singh, Effects of Sub-lethal doses of Insecticides, begun in 1953.

O. P. S. Sengar, Comparative studies on the structure & physiology of the digestive system of some *Coleoptera* of different food habits, begun in 1953.

Jagdish Pt. Mathur, The Skull with special reference to the temporal region of Indian lizards, begun in 1953.

- Krishna Mohan Mathur, Comparative Anatomy and Histology of the alimentary tract in relation to feeding habits of Indian birds, begun in 1953.
- Suresh Chand Bhargava, Morphology of the garden libards *Calotes Versicolor Daud*, begun in 1953.
- Vishwa Nath Sinha, A comparative study on the cytoplasmic Inclusions in the cogenesis of certain Indian Insects, begun in 1954.
- Magan Bihari Lal Saxena, Anatomy of common U.P. Mahaseer with special reference to its migratory and feeding habits, begun in 1954.
- Surendra Sharma, Studies on the Mechanism of Ingestion, Peristalsis and Egestion in *Pheretima Posthuma* (vaillant) and *Eutyphoeus Waltoni* Michaelson, begun in 1954.
- E. I. Thomas, The Anatomy and Development of *Lamellidens Marginalis* (Lamarck), begun in 1954.

Agriculture

D. Sc.

- G. S. Lavania, The Economic Holding and Farm Structure in U.P., begun in 1950.

Ph. D.

- Jitpal Singh, Development of aridity in Western U.P., begun in 1953.
- R. N. Singh, Studies in differentiation & Development of Fruit Buds in Mango (*Mangifera Indica*) varieties, begun in 1953.

Commerce

Ph. D.

- Visheswar Prasad Sharma, India's trade with her neighbours, begun in 1953.
- T. N. Rastogi, Marketing of Indian Manufactured goods at home and abroad, begun in 1953.
- Girraj Prasad Gupta, The Reserve Bank of India and Monetary Management, begun in 1953.
- M. C. Bansal, Foreign Trade of India during world war II and after, begun in 1953.
- Shanti Swarup Gupta, Glass Industry in India, begun in 1953.
- Fateh Bahadur Singh, The Role of Agro-Industries in the economy of U.P., begun in 1953.
- Om Prakash Bajpai, Social Insurance Planning in India, begun in 1953.
- Tilak Singh Katiyar, State in relation to industry, begun in 1954.
- Shri Chand Jain, The Indian Tea Industry & Trade, begun in 1954.
-

ALIGARH

English

- Mrs. Shaista Rahman, Government of India Humanities Research Scholar,
A Critical Study of the poetry of Mrs. Browning.
Miss Motahira Ali Zamin, University Research Scholar, A Critical Study of
the novels of Benjamin Disraeli.
O. P. Govil, Registered Ph.D. student, Robert Browning's theory of poetry.
B. A. Khan, Reader in English, Modern Poetic Drama.
A. A. Ansari, Lecturer in English, Blake's theory of Imagination.
A. Bose, Professor in English, Shakespearean Comedy.

Education

M. Ed.

1952—53

- Construction of a Non-Verbal Test of Intelligence for 11+.
School Marks and Promotion.

1953—54

- Achievement in English (Some Aspects of Method in the Secondary
School).
A Study of The Recommendations of Government Commissions and Com-
mittees on Curriculum Reform for Secondary Schools.
Selection of Textbooks for Teaching English in Indian Schools.
Progressive Steps for the Training of Teachers in the State of Bhopal.
A Historical Survey of the Origin, Growth and Present Status of The Jamia
Millia Islamia (Jamianagar) Delhi.

1954—55

- Children's Interests, Their Constancy and Their Educational Values.
A Psychological Study of Social Groups (With a Chapter on a Socio-metric
Study).
Content-Analysis of Urdu Text-Books.
A Study of the Traits in Successful Teaching, Ranked by Student-Teachers,
Inservice Teachers, and Educational Administrators.
A Survey of Secondary Education in Kashmir.
A Historical and Critical Survey of the Progress of Secondary Education
for Girls in Uttar Pradesh since 1921.
A Brief Survey of Primary Education in Kashmir.
Socio-Economic Differentials and the Developmental Process with Special
Reference to Educational Achievement.
Construction of an Achievement Test in Geometrical Reasoning.
Maladjustment Among Pre-Adolescent Children.

Prediction of Success in High School on the Basis of School Examination.
 Comprehension Test in English for 9th Class.
 Language Development in Childhood.
 Attitude of School Students towards Hindi as a Subject for Compulsory Study.
 A Critical Analysis of English Prose Selections for High Schools in U.P.
 Standardization of an Achievement Test in General Science.
 Religious Education for School Children.
 A Critical Study and Historical Survey of Moral Education during the Period of Adolescence.
 Aesthetic Education and Its Bearing on Human Development.
 Standardization of a Non-Verbal Test of Intelligence for 9+.

Mathematics

Prof. Dr. S. M. Shah, Entire and Meromorphic Functions Quasi-Monotone Series, and Matrices.
 Dr. J. A. Siddiqi, Quasi-analytic Functions and Fourier Series.
 Dr. U. N. Singh, Fourier Transforms.
 Dr. H. C. Gupta, Operational Calculus and Stochastic Processes.
 O. A. Siddiqi, Matrices and Differential Equations.
 Mansoor Ahmad, Cauchy's Theorem, Theory of Function of a complex variable and Entire and Meromorphic Functions.
 Dr. S. K. Singh, Entire and Meromorphic Functions.
 Quazi Ibadur Rahman, Entire and Meromorphic Functions. Dirichlet Series.
 Hari Shankar, Quasi-analytic functions and Entire and Meromorphic Functions.
 Dr. Miss Girija Khanna, Entire Functions and Dirichlet's series.
 Nisar Ahmad Khan, Characteristic roots of Matrices.
 C. R. Marathe, Matrices of finite and infinite order.

LIST OF PUBLICATIONS

Dr. S. M. Shah :

Note on Eigen Function Expansions, published in J. of London Math. Soc. 27 (1952) 58-64.

A note on Entire functions of perfectly regular growth, published in Math. Zeit. 56(1952) 254-257.

Exceptional values of entire and meromorphic functions. Duke, published in Math. J. 19(1952) 585-594.

S. M. Shah and M. Ishaq :

An extension of Dvoretzkey's Theorem, published in Proc. Ind. Acad. Sci., 36(A) 1952, 402-404.

On the maximum Modulus and the coefficient of an entire series, published in J. of Ind. Math. Soc., 16 (1952) 177-182.

A. R. Ansari and S. M. Shah, A note on the certain Nil-potent Matrices, published in Math. Student 20 (1952) 113-114.

- S. M. Shah and Girija Khanna, On entire functions of Infinite order, published in Math. Student 21 (1953) 47-48.
- S. M. Shah and S. K. Singh :
 Borel's theorem on α -points and exceptional values of Entire and meromorphic functions, published in Math. Zeit. 59 (1953) 88-93.
 The Maximum term of an entire series, published in Proc. Royal. Soc. Edinburgh A, LXIV 80-89.
 On the maximum function of the meromorphic function, published in Math. Student 22 (1954) 121-128.
- Dr. Jamil Ahmad Siddiqi :
 Quelques theoreme d'unicite *ibid.*, 236 (1953) 1727-1728.
 On a theorem of Fejar, published in Math. Zeit. 61 (1954) 79-81.
- Dr. U. N. Singh :
 On the strong summability of the Derived Fourier series and its conjugate series, published in Math. Zeit. 56 (1952) 280-288.
 Sur quelques theoreme de Hille et Tamarkin, Comptes Rendus 236 (1953) 885-887.
 Fonctions entieres et transformee de fourier Generalise Comptes Rendus 237 (1953) 14-16.
- Dr. H. C. Gupta, An operational relation, published in Math. Zeit. 61 (1954) 70-74.
- Omar Ali Siddiqi, A note on the solution of partial differential Equation, published in Am. Math. Monthly 61 (1954).
- Dr. S. K. Singh :
 The maximum term and the rank of an entire function, Publication mathematicae, 3 (1953) 1-8.
 Borel's theorem on α -points and exceptional values of Entire and meromorphic functions, published in Math. Zeit. 59 (1953) 88-89 (Jointly with S. M. Shah).
 A note on the paper of R. C. Buck, published in Proc. Ind. Acad. of Sc. XXXVIII (1953) 120-121.
 On the zeros of a class of polynomials, published in Proc. Nat. Int. of Sc. India XIX (1953) 601-604.
 A note on Entire function, published in J. of Univ. of Bombay, XX (1952) 1-7.
 The maximum term of an entire series, published in Proc. Royal Soc. of Edinburgh LXIV (1954) 80-89. Jointly with S. M. Shah.
 On the maximum function of a meromorphic function, published in Math. Student XXII (1954) 121-128.
- Dr. Miss Girija Khanna :
 Two theorems concerning analytic functions of an analytic function, published in Proc. Nat. Acad. Sc. of India 21 (1952) Sec-A A. Parts III and VI.
 On a theorem of Phragmen—Lindeloff, published in Proc. Nat. Acad. of Sc. 21 (1952) part III and VI.

Dr. Miss Girija Khanna and Nirmala Pandey :

On a certain Dirichlet series, published in Proc. Nat. Acad. of Sc. India, Vol. 21 Sec. A. part I. 1952.

On a certain Dirichlet series II, published in Proc. Nat. Acad. of Sc. India, Vol. 21. Sec. A. parts III and VI. 1952.

S. M. Shah and Girija Khanna, A note on Entire function of infinite order, published in Maths. Student, 1953.

Mansoor Ahmad :

A note on the theorem of Borel, published in Math. Student XXI (1953).

On the exceptional values of Entire functions of Infinite order, published in J. of Ind. Math. Soc. XVIII (1954).

Syed Abul Kazim Razvi, Al-Biruni and Trigonometry. A critical survey of the third book of kanun e masudi published in the Albirini Celebrations Volume, Iran Society of India.

Persian

Dr. Hadi Hasan, Professor of Persian :

The Unique *Dīwān-i-Falakī* in Madras, published by "Islamic Culture", 1952.

The Unique *Dīwān* of the Emperor Humāyūn, published by "Islamic Culture", 1953.

Mughal Poetry : its historical and cultural value, published by Mr. Nazir Husain, 11, Perambur High Road, Madras, (1953).

Kāhī : His Life, Times and Works, published by "Islamic Culture", (1954).

The Unique *Dīwān-i-Kāhī*, in Press, (to be published by the Iran Society, 159-B, Dharamtala Street, Calcutta).

Persian translation of *Shakuntala* and the *Maqālāt*, in Press (to be published by the Indian Council of Cultural Relations, Pataudi House, New Delhi).

Mrs. Ummihānī, Lecturer in Persian, *The Nafai'su'l-M'āthir*, Unique history of Akbar's period, research work in progress.

Shamoom Israili, Lecturer in Persian, *Imādī* : His Life, Times and Works, research work in progress.

Nabi Hādī, Lecturer in Persian, *Tālib-i-āmuli*, His Life, Times and Works, research work in progress.

Miss Zohra Iqbal, Research Fellow, *Ghazālī*, His Life, Times and Works, research work in progress.

Philosophy and Psychology

Professor M. Umaruddin (Chairman) :

Sir Syed and his new Religious Thought, published in "Aligarh Magazine", Aligarh Number.

A Comparative Study of Al-Ghazali with some modern western philosophers.

Mr. Zafar Ahmad Siddiqi (Reader in Philosophy) :

A Translation of Hay Ibn Yaazin of Ibn Tofail from Arabic into Urdu (Recently published).

Philosophy of Hay Ibn Yaazan (also published recently).

Hikmat-i-Kalimi (A Translation of Iqbal's work into Urdu Verse, together with an Introduction on the general Philosophy of Iqbal). It has also been recently published.

A Critical Study of Dialectical materialism, published in the Philosophical Quarterly in 1954.

Sex Differences in Monotory susceptibility.

Dr. S. M. Moghni (Reader in Psychology), "An experimental Study of Reactions to Stress in a Conflict and Frustration Situation" (being the Ph.D. Thesis at the University of London).

Dr. Ishrat Hasan (Lecturer in Philosophy) :

Sarood-i-Bekhudi (in Persian Verse). published in 1954.

Mubadiat-i-Ilahiyaat (A Translation from Bergson), published in 1954.

Sarood-i-Baqa (A Translation into Urdu Verse of Wordsworth's "Ode to Immortality", published in 1953.

Ethics of Al-Ghazali, Part II (A Translation of Prof. M. Umaruddin's Book 'Alig'). published in 1952.

Articles on a comparative study of Iqbal with various Eastern and Western Philosophers and on some other topics published in different journals.

Dr. Anwar Ansari (Lecturer in Psychology) :

Carried out an experimental investigation on the relation between individuals' preferences for literature and certain social values they might hold. (A thesis based on this investigation was submitted at the University of London for the degree of Ph.D. in 1954).

Contributed a paper to the Psychology Section of the Science Congress last year. The title of the paper is : "A Critique of the Traditional Approach in Psychology to Aesthetic Experience".

A small article on the concept of 'level' in Psychology is shortly going to be published in the journal 'Education and Psychology'.

Jamal Khwaja (Lecturer in Philosophy) :

The Logic of the Belief in the Existence of God.

The Problem of Pain and Divine Providence.

M. A. Beg (Lecturer in Psychology) :

Research on Socio-cultural factors contributing to mental disorders. Carrying out field work at present.

Articles : Quran and emotion of fear, Islamic Thought, Purposiveness in human behaviour.

Jamil Qadri (Demonstrator in Psychology) :

An Experimental Study of the Validity of the Photographic Method.

An Experimental Investigation about the Relative Significance of Preference and Attention with respect to Binocular Rivalry.

N.B.—The papers based on these studies were read in the Sessions of Indian Science Congress.

Science

Botany

1. PLANT PATHOLOGY.

Root Rot of Cereals.

A new technique has been evolved to test large number of varieties of wheat and barley against *Helminthosporium sativum* P.K. & B.

Several physiologic races of the pathogen have been found which not only differ in cultural characters but also in pathogenicity.

Resistance of 12 wheat varieties and 9 barley varieties has been tested in tubes, pots and in the field.

Anthraxnose of sorghum.

The phenomenon of physiologic specialisation in *Colletotrichum graminicolum* has been studied. Out of a large number of isolates studied fourteen of them could be distinguished as distinct races in their cultural characters, viz., size, colour, topography and zonation of the colony. Races also differ in their pathogenicity. This phenomenon has been hitherto unknown in this fungus.

Effect of vitamins on growth of fungi.

The effect of vitamins on several selected fungi has been determined. Some of them do not grow when the cultural medium lacks vitamins. In others the presence of small quantities of vitamins accelerates the growth and sporulation. There are others in which the presence of vitamins beyond the optimal concentration inhibits growth and sporulation.

Effects of germination of conidia of fungi causing downy mildew.

Normally the members of the Peronosporales germinate by the formation of germ tubes (direct germination). An interesting case has been observed in *Peronospora trifoliorum* de Bary in which the conidia not only germinate by the formation of germ tubes but also produce zoospores, a fact which has not been recorded in the literature.

Leaf curl of Papaya.

Leaf curl of Papaya has been attributed to a virus. It has been found out that the actual cause of leaf curl of Papaya is not a virus but a nematode.

Apple scab.

Apple scab has been observed in an epidemic form in Kashmir. The etiology, histology and the phenomenon of variation has been studied and certain measures to control this devastating disease have been suggested in the symposium on high altitude research held recently at Gulmarg.

2. MORPHOLOGY & EMBRYOLOGY.

Poliferation has been described in *Saccolapis myosuroides*, *S. interrupta*, *Eragrostis nutans* and *Oryza sativa* var *fatua*.

A reinvestigation of *Isomeris arborea* has shown that the megaspore mother cell produces a linear triad in which the uppermost cell is a dyad and the lower two cells are the megaspores. The chalazal megaspore is functional. The mature embryo sac is 8-nucleate and conforms to the Polygonum type. Billings' report that the megaspore mother cell develops directly into a 3-nucleate mature embryo sac comprising two synergids and an endosperm nucleus only, is not confirmed.

The Embryology of *Utricularia flexuosa* has been studied in detail. The general course of development agrees with that in related plants but the species exhibits a remarkable degree of variation in almost every aspect of its embryology. Among the more important variations may be mentioned the diversity in the type of megaspore tetrads, variation in number of functional megaspores, frequent occurrence of twin embryo sacs and occasionally triplets and quadruplets, occurrence of three or four polar nuclei and a corresponding reduction in the number of synergids, reversal of polarity in embryo sac, germination of pollen in situ, compound pollen grains, double male gametophytes and variation in endosperm development and embryogeny.

A teratological phenomenon of the occurrence of pollen chambers on the gynaceum and three ovules situated outside the ovary was noted in *Citrus medica* var. *limon*. Three free carpels in place of the usual single carpel have been recorded in *Poinciana pulcherrima*. A reinvestigation of *Borreria hispida* has shown that the mature seed is full of endosperm and the earlier report of Raghavan & Srinivasan that the endosperm is absent in the seed is not supported. The endosperm and seed structure of *Oldenlandis corymbosa* has been studied and the presence of non-nucleated cytoplasmic vesicles in the endosperm has been recorded.

The anatomy of floats in *Utricularia flexuosa* in which these structures occur only as an exceptional feature has been studied.

Chemistry

Ph. D.

Dr. Azizur Rahman :

- (i) Some aspects of the reaction between Acids and Urea. A new direct method for the preparation of Anilides and N-substituted succinimides.
- (ii) Hofmann rearrangement of some Aryl-aliphatic amides, begun in 1949.

- Dr. I. P. Varshney, The saponins from Indian plants (*Albizzia lebbek*, Benth), begun in 1949.
- G. S. Gupta, Chemical Investigation of *Zataria multiflora*, Boiss (Saatare-Farsi), Essential Oils, begun in 1949.
- Wasiur Rahman, Glycisodes from some of the members of Umbelliferae family, begun in 1949.
- S. Mohd. Osman, Chemical study of the fixed oils of some members of the Umbelliferae family, begun in 1950.
- N. A. Abraham, Synthesis of highly phenylated polybasic acids and additive reactivity of diphenyl ketene, begun in 1951.
- M. Saleem Siddiqui, Chemical Investigation of the seed and seed-coat fats of some of the members of Umbelliferae family, begun in 1951.
- S. Mazhar Husain, Addition of diphenyl and dimethyl ketone to unsaturated hydrocarbons, begun in 1953.
- Mohd. Mohsin, Studies on starch from *Ipomea Batata*, begun in 1950.
- Naseem Hasan Khan, Synthesis of amino-acids, begun in 1952.
- Abul Fazal, Synthesis of amino-acids, begun in 1953.
- Dr. A. R. Kidwai, Reader, Studies in the sex-hormones metabolic products in pregnancy urine.
- Dr. W. U. Malik, Reader :
- (i) Studies on sol-gel transformation.
 - (ii) Physical studies on Coagulation.
 - (iii) Physico-chemical studies on the composition of complex compounds of livalent chromium and monovalent copper.
- M. Shahabuddin Ahmad, Chemical Examination of seed fats of Indian plants, begun in 1952.

Zoology

1. AGRICULTURAL ENTOMOLOGY :

- (i) Morphology, Biology and Development of *Stenobracon deesae*,
- (ii) Morphology and Biology of *Leptocorisa varicornis*, (iii) Morphology and Biology of *Athalia proxima*, (iv) Morphology and Biology of Cotton Boll-worm, (v) Bionomics of Mango-hoppers, (vi) Ecology of the eggs of *Grylloides sagillatus* (vii) Food-plant preference of desert locust.

2. MEDICAL ENTOMOLOGY :

- (i) Morphology and Biology of *Goniodes dissimilis*, (ii) Taxonomy and bionomics of Culicidae in U.P. with a special reference to their immature stages.

3. INSECT CONTROL :

- (i) Control of Mango-hopper, (ii) Inheritance of insecticidal resistance in the house-fly.

4. EMBRYOLOGY OF INSECTS :

(i) Embryology of *Pyrilla purpurilla* Walker, (ii) Embryology of *Athalia proxima*.

5. PARASITOLOGY :

(i) Morphology of *Taenia solium*, (ii) Plant parasitic nematodes of Aligarh District, (iii) Morphology of *Fasciola gigantica*, (iv) Morphology and life-cycle of *Cotugnia digonopora*, (v) Morphology and life-cycle of *Paronina colombae*, (vi) Morphology of *Moniczia expansa* and the acquired immunity due to this infection.

ALLAHABAD

1952

Arts

D. Phil.

- Ashfaq Ahmad, Jalal Uddin Dawwani and his Ethics.
Km. Jharna Ghosh, Economics and Regional Geography of East U.P.
Kushal Pal Singh, Water Power in Uttar Pradesh.
Hari Prasad Jayaswal, Regional Study of the Sone Basin.
Jagdish Prasad Srivastava, Studies in Dingal Literature.
Km. Vimla Waghrey, The Sufi Writers of Deccani.
Raj Narain Bisaria, Origin and Development of Symbolism in Hindi.
Nandan Gopal Srivastava, A Study of Bhartendu Harish Chandra—The Dramatist.
Gopi Krishna Sarma, Influence of English Romanticism on the Renaissance in Hindi Literature.
Harendra Pratap Sinha, Studies in the Life and works of Mirabai.
Kripa Shankar Shukla, Contribution of Dadu to the Sant School of Hindi Poetry.
Km. Kamala Gupta, The Works of W. Somerset Maugham examined in the light of his literary theories.
Harsha Nath Misra, Panchayat System in Uttar Pradesh.
Narendra Singh Sodha, American Diplomacy in China since the Open Door.
Aditya Kishore Varma, Problems of Minorities in India from 1900-1950.
Madan Gopal Gupta, Harold J. Laski's Political Ideas.
Udai Narain Roy, Cities and City Life in Ancient India.
Km. Pansy Chhaya Ghosh, The Development of Political Parties in India.
Tejendra Kumar, Individual Freedom under the British Rule in India (1858-1947).
Rama Krishna Mani Tripathi, Aspects of Herbert Spencer's Political Thought.
Parmeshwar Nath Mushran, 'Burke' Political Philosophy.
Narendra Yadava, Economic Geography of Vindhya Pradesh.
Indu Prakash Singh, Thought in relation to Reality (as envisaged particularly by Sankara and Kant).
Km. Lakshmi Varma, A critical study of the Monistic tendencies in Contemporary Philosophy (with special reference to British India and Indian Thought).
Kailash Pati Srivastava, Bergson's Creative Evolution in the light of Buddhism.
Jagmohan Sharma, The Philosophical Background of the Hindi Bhakti Poetry.
Amjad Ali, Erotic Literature of the Arabs up to the Golden Period of Abbasides.
Sm. Sarla Mohan Lal, The Relation of the Moghul Government with the State of Jaipur from 1556-1707.
Km. Kiran Jain, Personality Studies of Adolescent Girls.

Commerce

- Dharmendra Singh Kushwaha, The Nature and Significance of Welfare Economics.
- Raj Kumar Garg, Labour Welfare in India.
- Ram Saran, An Economic Study of Soil Conservation in the U.P.
- Satish Dutt Pandey, Deficit Financing and its application to India.
- Ram Gopal Agarwal, Theory & Practice of Economic Controls in India since 1939.
- Prem Chand Jain, Industrial Finance in India.
- Akshaya Banerji, Planning of India's Basic Industries.
- Km. Bhakti Ghosh, The Growth of India's Population between 1901-1951.
- Km. Sujata Bose, Agricultural Legislation and Policy in India with special reference to U.P.
- Krishna Kumar Srivastava, Labour Legislation in U.P. after 1919.
- Vinaya Kumar, Labour Housing in India with special reference to U.P.
- N. K. Aravindaksha Nair, Labour disputes and Labour Legislation in India.
- Mohan Lal Gaur, Labour Organisation and Welfare in India with special reference to P. & T. Departments.
- T. K. Janardanam, Plantation Labour in India with special reference to Travancore-Cochin.
- Triloki Nath Dhar, Tariff Policy and Planned Development of Indian Economy.
- Km. Sarla Gautam, Working of Sales Tax in India.
- Prem Kumar Jain, Problems of Industrial Plannings in Backward Economics.
- Audhesh Kumar Tripathi, Manpower Organisation in India.
- N. B. Tewari, Rural Finance in India.
- Ved Vyas Pandey, Marketing of Sugarcane in India with special reference to U.P.
- Govind Lal Chatterji, Indian Monetary Policy and its effect on Indian Economy.

Science

- Dharam Vir Prasad Gaur, Use of Straw as Manure.
- Gyan Prakash Gupta, Studies on Nitrogen Fixation.
- Birendra Singh Bishat, Micro Elements in crops Plants.
- Sushil Kumar Bajpai, Nutrition of Metabolism and Crop Plant.
- Jagat Swarup, Theoretical Physics.
- Mahendra Singh, Study of Spectra of some Molecules.
- Shyam Behari Lal Srivastava, Conductivity of Crystals.
- Km. Shakuntala Gupta, Fish Morphology.
- Brajendra Prasad Srivastava, Studies on Lencinodes Orbonatis and Euzo-
phera Peticella.
- Abanish Narain Ghosh, Digestive System of Hemiptora.
- Sheo Gopal Misra, Formation of Acid and Alkali Soils.
- Bimalendu Bose, Influence of Boraks Phosphates, Vandates and Nitrogen Fixation.
- Rajendra Kr. Dev Roy, Studies in Yeast.
- Pritam Singh, Studies on Nitrogen Fixation with Clover Sanai etc., as energy materials.

- Tej Narain Chojee, Nitrogen Transformations with Lignite, Assam Coal etc. as energy.
- Krishnan Lal Nagpal, Nitrogen Transformations with saw-dust, leaves, etc. as energy materials.
- Gyanendra Lal Shah, Lignite as retarder in Nitrogen loss.
- Narendra Kumar Kulshreshtha, Studies on Hydrous Oxides.
- Kanhaiyal Lal Yadava, Studies on Colloidal Silicates and gels.
- Km. C. R. Lakshmi, Studies in Colloids.
- Tara Chandra Pande, Studies in Soil Colloids.
- Mathura Prasad Singh, Chemical Kinetics.
- Km. Sulaxana Kumari, Theory of Infinite Series.
- Nivas Bhatt, Summability of Infinite Series.
- Prakash Nath Mehrotra, Helminthology.
- Rajendra Pal Kapil, Entomology, Morphology and Biology of honey-bee (Api-Indica) and its varieties.
- Vijai Swarup Bhatnagar, The Morphology and Life History of certain digenetic trematode. Helminthology.
- Indu Prakash Srivastava, Studies on the Structure and Behaviour of Chromosomes of certain Insects with an enquiry into the interspecific differences in Chromosome structure and number.
- Lalit Mohan Srivastava, Physiology of the sugarcane.
- Uma Shankar Singh, Studies on sugarcane.
- Km. Bimla Budhraj, Physiological Studies on Potatoe.
- Radhey Krishna Agarwal, Cultural and Pathological Studies of some fungi isolated from vegetables and fruits.
- Dharam Vir, Cultural and Pathological Studies of some fungi isolated from vegetables and fruits.
- Guru Dayal Prasad, Breeding and Cytogenetical Studies of Barley.
- Bipin Kumar Agarwal, Studies in X-Ray Spectra.
- Amar Nath Nigam, Studies in X-Ray Spectra.
- Yatendra Pal Varshni, Investigations in Molecular Spectra.
- Ram Mani Pande, Studies in Molecular Spectra.
- P. S. Balaraman, Studies in Fats and Oils.
- Ramesh Chandra Adhaulya, Studies in local Trips & Detailed Morphology of a selected Insect Type.

D. Litt. (Arts)

- Dr. Sunrendra Nath Shastri, A Comparative Study of the Theory of Drama in Sanskrit and English and its effect on Hindi Drama (1875-1945 A.D.).

D. Litt. (Commerce)

- R. N. Bhargava, The Theory and Working of Union Finances in India.

D. Sc.

- Dr. Nandkishore, Studies in the Oxidation of Metallic Hydroxides by Air.
- Dr. S. S. Baijal, Effect of various groups and ring complexes on Carbon tetrahedral angle.
- Dr. Ram Gopal Chatterji, Ultrasonics.
- Dr. Sarit Kumar Roy, Studies on the morphology, physiology and cytochemistry of the ovarian and sematic cells of certain invertebrates.

- Dr. Arvind Mohan Srivastava, Physical Properties of Sols and Gels.
 Dr. Virendra Prakash Sharma, Nitrogen Transformations.
 Dr. C. R. Narayana, Studies in Nitrogen Transformations.
 B. Rama Moorthy, The Physico-Chemical Studies on the surface colour of Virgin soils of India and the significance of this colour for plant growth.

1953

Arts

D. Phil.

- Surendra Nath Mittal, Bhartiya View Problems of Nation, State and Society.
 G. P. Malaviya, History of Social Legislation in the 19th century.
 R. S. Gaour, Indo-Tibetan Political and Cultural relations from 17th century A.D.
 K. B. Saxena, Social History of Northern India in the 1st half of 18th century.
 L. N. Shukla, Gujrat under the Chalukyas.
 K. M. S. Singh Deo, Savai Jai Singh of Amber-Jaipur.
 G. D. Banerji, Administration of the East Indian Company under Sir John Shore.
 Km. Sandhya Mukerji, Domestic Life in Ancient India.
 Ragheeb Husain, Abdul Qadir Bedil.
 Chaudhary Ajit Shankar, A Historical and Comparative Study of the Science of Hindi Criticism.
 Ganga Pd. Srivastava, Comparative study of Nath Sampradaya in Hindi and Bengali Literature.
 Prahlad Das Agarwal, Life and Works of Garibdas.
 Km. Kanti Kumari Khare, Influence of the Sanskrit Mahakavyas on Hindi Mahakavyas.
 Ram Swarup Chaturvedi, Study of Caste-sub-dialects of Brajbhasha (Agra District).
 Mithilesh Kanti, Treatment of the Erotic Sentiments in the Bhakti Kavya of Hindi.
 S. S. Dwivedi, The Text and the textual Problem of Keshavadas' Ram Chandrika.
 S. B. Sharma, Treatment of Child Psychology in Hindi Literature (upto 1800 A.D.).
 R. K. Gupta, Studies in the Hindi Khanda Kavyas.
 Mahadeva Pd. Pandey, Swami Ramcharan : Study of his life and works.
 Ganga Charan Tripathi, Studies in Awadhi Folk Literature.
 Sharda Pd. Pandey, The Problem of the supply of the Cereals in U.P.
 Km. Malati, Influence of Shaiva and Shakta Sampradayas on Hindi Literature of Bhakti Period.
 Anand Prasad Dwivedi, A Study of Acharainya Sutra along with its commentaries.
 Km. P. Lakshmikutty, Comparative Study of Malayalam and Hindi Modern Literature (1870-1950).

- Banshi Dhar Panda, Social and Religious reform movements of India (19th and 20th centuries) and their influence on Modern Hindi Literature.
- Sudhakar Misra, Studies in Bhojpuri Folk tales.
- Shiv Prasad Kala, Study of Garhwali Folk Literature with special reference to Garhwali Ballads.
- Madan Mohan Varma, Role of Nobility in the 17th century A.D.
- Sm. Sri Kumari Mitter, The History of Sharqi Dynasty.
- Tribhuwan Shankar Mehta, The Development of Primary Education in India from 1882 to 1938 with particular reference to U.P.
- Km. Yashoda Gupta, Political Philosophy of Mahatma Gandhi.
- Ved Prakash Gaour, The Civil Services in India (1900-1951).
- Ved Prakash Sharma, India and International Peace.
- Vimlesh, Development of Social Legislation in India (1858-1950).
- Km. Saeedah Rehana, Foreign Policy of the Mughals (1600-1658).
- Om Pratap Dikshit, The Growth and Development of Indian Legislature.
- Km. Nirmala Gupta, Political Philosophy of Burke.
- Brij Nath Singh Yadava, Some Aspects of Society in Northern India in 12th century A.D.
- Asha Ram, Recent trends in Socialist Thought.
- Vijai Deo Narain Sahi, Western Influence on Hindi Literary Criticism.
- Subedar Singh, Mysticism in the Romantic Poetry of the later 18th century and the earlier 19th.
- Gauri Shankar Lal, Mental Survey of certain selected professions and the determination of their average I.Q.
- Km. Nirmala Handu, A study of Interests, attitudes and attainments of High School pupils.
- Km. Pratibha Srivastava, The Problem of Mandukya and Karikas.
- Hafiz Ghulam Murtaza, Abdul Hasan Al-Ash'ari.
- Ram Surat Lal, Socio-Psychological Factors in Teachers' morale.
- Raman Nigam, Indo-Afghan Relations 1800-1842.
- K. C. Joshi, Political Ideas of H. J. Laski.
- Syed Hohd. Aquil Rizvi, Development of Urdu Masnavi in Northern India (1750-1950).
- Ananth Bandhu Mukerji, Agricultural Geography of the Ganges-Jamuna Doab.
- Man Bahadur Chandra, A Regional & Economic Survey of the Middle Gangetic Plain.
- Gopi Nath Sharma, Rama Bhakti and its Expression in Hindi Literature.
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- Mrs. Sudha Joshi (Miss Devlalkar), Some aspects of sulphonamide resistance, begun in 1950, completed in May, 1954.
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- G. V. Nadkarni, Studies in solvent oil mixtures, begun in 1953, likely to be completed in 1955.
- B. Srinivasan, Studies in the chemistry and hydrogenation of castor oil, begun in 1947, completed in November, 1953.
- C. B. Khanpara, Studies in surface active agents, begun in 1949, likely to be completed in June 1955.
- M. A. D. Alfonso, Synthetic Chemotherapeutics, begun in 1951, completed in September, 1953.
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- Mrs. S. R. Shah, Antibiotics or anti-infective agents from plants and synthetic substances begun in 1953, likely to be completed in 1955.
- S. P. Potnis, Studies in natural resins (1) Lakes from lac dyes, begun in 1952, completed in July, 1953, (2) natural resins as precipitants for basic dyes, begun in 1953, likely to be completed in 1955, published in Paint India 1953, III, No. 1, 107, *Ibid*, 1954, III, No. 11.

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- A. Subramanian, Reduction potentials of Vat dyes and their influence on the oxidation of cellulose, begun in 1952, likely to be completed in 1954.
- W. B. Achwal, Studies in oxycellulose, begun in 1953, likely to be completed in 1955.
- V. D. Sahakari, Some aspects of bleaching of textiles, begun in 1953, likely to be completed in 1955.
- R. J. Chikte, Some experiments on kier boiling and bleaching of cotton textiles, begun in 1952, likely to be completed in 1954.
- M. R. Paranjpe, Anti-tubercular and anti-bacterial agents, begun in 1950, likely to be completed in October, 1954.
- M. S. Tawakley, The technical preparation of Indanthrene Blue RSN and Chlorinated Indanthrenes, begun in 1950, completed in January, 1953.
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- N. B. Desai, Studies in halogenated vat dyes, begun in 1952, likely to be completed in 1955.
- R. B. Mitra, Studies in the Synthesis of polycyclic hydrocarbons, begun in 1953, likely to be completed in 1955, published in Curr. Sci.
- R. R. Pandit, Recovery of byproducts etc., from bitters—Preparation of calcium carbonate B. P., begun in 1952, likely to be completed in August, 1954.
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- S. P. Manjrekar, Studies in Glycine metabolism, begun in 1953, likely to be completed in 1955.
- M. A. Pathak, Fungal Analyses, begun in 1950, completed in June, 1952.
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- D. A. Desai, Disinfectants from Indian raw materials, begun in 1948, completed in May, 1953.
- M. D. Patel, A study of Indian Shiya Zeera, begun in 1949, completed in July, 1952.
- J. G. Devi, Assay of Pharmaceuticals, begun in 1950, completed in March, 1953, published in Ind. J. Pharm., 1952, 14, 43 ; *Ibid.*, 1953, 15, 3 ; *Ibid.*, 1953, 15, 168 ; *Ibid.*, 1953, 15, 193 ; *Ibid.*, 15, 227.
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- G. J. Kapadia, Study of vegetable drugs, begun in 1951, likely to be completed in December, 1954, submitted synopsis of thesis.
- R. G. Battu, Anti-infective Synthetics, begun in 1953, likely to be completed in 1955.
- V. Krishnan, Studies in natural resins, rosin and its derivatives, begun in 1952, completed in October, 1953, published in *Paint India*, 1953, **III**, No. 7, 27, and No. 8, 27.
- V. N. Nagarsenkar, Studies in natural resins—plastics and plasticizers from shellac, begun in 1953, likely to be completed in March, 1955, has submitted synopsis of thesis.
- S. S. Wagle, Utilization of manganese ore, begun in January, 1954, likely to be completed in 1955.
- V. N. Junnarkar, Studies in technical preparation of Indanthrene Dark Blue BO and other Benzanthrone derivatives, begun in 1951, completed in May, 1954.
- Rajendra Shankar, Technical preparation of Caledon Jade Green and allied colours, begun in 1950, completed in January, 1953.
- J. N. Tawakley, Chemical and analytical studies in preparation of 16 : 17 Dimethoxy-dibenzanthrone, begun in 1952, likely to be completed in October, 1954.
- S. P. Jain, Studies in technical preparation of stabilized diazonium salts, begun in 1953, likely to be completed in 1955.
- M. J. Shah, Technical investigation in synthesis of anthraquinone and its derivatives, begun in 1953, likely to be completed in 1955.
- G. K. Joshi, Studies in liquid-liquid extraction, begun in 1951, likely to be completed in July, 1954.
- M. R. Chivate, Studies in phase-equilibria, begun in 1952, likely to be completed in March, 1955, synopsis of thesis submitted.
- B. S. Sule, Studies in phase, begun in 1953, likely to be completed in 1955.
- R. K. Prabhudesai, Studies on heat transfer, begun in 1953, likely to be completed in 1955.
- R. H. Bengeri, Studies in oxycellulose, begun in 1951, completed in December, 1953.
- G. S. Sudrik, Studies in oxycellulose, begun in 1951, completed in November, 1953.
- R. R. Wagle, Degradation of Cellulosic materials under atmospheric conditions, begun in 1951, completed in July, 1953.
- K. E. Bharucha, Utilization of industrial wastes of the Oil industry, begun in 1952, completed in February, 1954, Indian Patent No. 48405.
- G. Laximinarayana, A chromatographic study of fats and fatty acids, begun in 1952, likely to be completed in 1955.
- M. N. Marathe, Determination of thermal conductivity of powders, begun in 1951, completed in September, 1953.
- K. S. Sanvordenkar, Studies in metal powders-bearing compositions, begun in 1951, completed in July, 1953.

- R. M. Khandwala, The production of iron powder from Indian iron ore and its properties, begun in 1950, completed in November, 1952.
- V. Ramanathan, Studies on lubricants, begun in 1953, likely to be completed in 1955.

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- S. R. Desai, Absorption spectra of thiophenes, begun in 1950, completed in December, 1952.
- M. W. Desai, Recovery of sulphur etc., from sulphates, recovery of sodium carbonate and hydrogen sulphide from sodium sulphate, begun in 1952, likely to be completed in March, 1955.
- V. V. Kholgade, Studies in fatty oils, begun in 1947, completed in December, 1952.
- G. M. Limaye, Composition and properties of fatty oils, begun in 1952, likely to be completed in December, 1954, has submitted synopsis of thesis.
- M. R. Kalyanram, Production of iron powder by gaseous reduction, begun in 1952, likely to be completed in May, 1955.
- Miss Prema Fatterpaker, Role of folic acid and Vitamin B 12 in the metabolism of choline and methionine, begun in December, 1953.

School of Economics and Sociology

Ph. D.

- Abadian, B. K., A Study in General and Selective Credit Control with special reference to India, begun in June, 1953, likely to be completed in June, 1957.
- Acharya, I. G., Economics of Minimum Wage with special reference to India, begun in June, 1949, completed in June, 1952.
- Aiyer, S. P., Modern Trends in Quasi Federalism, begun in June, 1952, likely to be completed in July, 1956.
- Badhe, G. S. Social Legislation, begun in June, 1949, completed in November, 1953.
- Bhatia, R. J., Income Generation and Economic Progress, begun in June, 1952, likely to be completed in June, 1955.
- Bhatt, H. C., Problem of Capital Formation with special reference to Backward Areas, begun in June, 1951, likely to be completed in September, 1954.
- Bhojani (Miss) H. N., Political Development of India in 20th Century, begun in June, 1951, likely to be completed in June, 1955.
- Bhouraskar, D. M., Public Debt in India, begun in June, 1952, likely to be completed in July, 1956.
- Bopegamage, A., An Ecological Study of the City of Delhi, begun in November, 1953, likely to be completed in June, 1956.
- Borkar, V. V., Public Finance and Full Employment with special reference to Under-developed Systems, begun in June, 1950, likely to be completed in September, 1954.
- Brahmananda, P. R., Economics of Welfare Maximisation with special reference to Pricing in Public Utilities, begun in August, 1946, completed in December, 1953.

- Desai, B. C., Recent Trends in the Industrial Economy of India, begun in June, 1950, likely to be completed in June, 1955.
- Desai, J. K., Economics of Animal Husbandry with special reference to Gujarat, begun in December, 1952, likely to be completed in June, 1955.
- Divatia (Mrs.) K. V., Inter-relations of Government in India in the 20th Century, begun in November, 1950, likely to be completed in October, 1954.
- Dixit, B. V., Individual in Marxist Society, begun in June, 1952, likely to be completed in June, 1956.
- Dwarkadas, R., Role of the Higher Civil Service in a Welfare State with special reference to India, begun in February, 1953, likely to be completed in October, 1956.
- Gadgil, V. S., Protection in Theory and Practice, begun in June, 1951, likely to be completed in June, 1955.
- Gawankar, K. S., Socio-Economic Aspect of Crime in Greater Bombay, begun in June, 1953, likely to be completed in June, 1957.
- Gokhale, V. N., Political Parties in Bombay State, begun in June, 1952, likely to be completed in June, 1956.
- Gopal, P. V., Ideological Conflicts in Indian Political Life, begun in June, 1949, completed in August, 1953.
- Gunisastri, P. V., The Effects of Protection on the Industrial Development of India, begun in November, 1950, completed in August, 1953.
- Joshi, M. G., Some Aspects of Mixed Economy, begun in February, 1953, likely to be completed in October, 1956.
- Joshi, Nirmal, Political Ideals of Plato, begun in August, 1952, likely to be completed in June, 1956.
- Katra, L. D., Burma and Parliamentary Democracy, begun in June, 1952, likely to be completed in June, 1956.
- Kerawalla (Miss), P. C., Nature and Volume of Crime in Bombay State, begun in June, 1952, likely to be completed in June, 1956.
- Khatkhate, D. R., Monetary Policy and the Development of Under-developed areas with special reference to India, begun in August, 1949, completed in July, 1952.
- Krishnaswamy, J., Local Finance in Madras State, begun in June, 1950, likely to be completed in June, 1955.
- Kulkarni, M. G., Social Ecological Study of Gokak Taluka, begun in June, 1953, likely to be completed in June, 1957.
- Kunte, B. G., Economic Prosperity of Bombay Province, 1919-1939, begun in June, 1953, likely to be completed in June, 1957.
- Kurup, C. P. D., The Evolution of Soviet Society, begun in June, 1952, likely to be completed in October, 1954.
- Leelabhai (Miss), S. N., Agricultural Finance in Under-developed Countries, begun in November, 1953, likely to be completed in October, 1957.
- Likhate, A. N., Study of Wage Regulation, begun in November, 1951, likely to be completed in October, 1955.
- Madalgi, S. S., The Problems of Marketing of Farm Products in Maharashtra, begun in June, 1953, likely to be completed in June, 1957.
- Mahadevan, (Miss) S., Theories of Revolution, begun in September, 1952, likely to be completed in August, 1956.
- Manoharan, T., Some Aspects of India's Balance of Payments, 1919-1939, begun in January, 1952, likely to be completed in September, 1954.

- Mathews, V. T., Pattern of Indian Public Expenditure, 1937-1952, begun in September, 1952, likely to be completed in August, 1956.
- Medhora, P. B., Capital and Investment Pattern in relation to Developing Economics, begun in June, 1951, completed in June, 1954.
- Mehra, R. D., Justice and its Administration, begun in June, 1952, likely to be completed in June, 1956.
- Metha, S. D., The Indian Cotton Textile Industry published in Bombay, 1953, begun in June, 1950, completed in June, 1952.
- Mehta, V. D., Industrial Labour in Madhya Bharat, begun in June, 1952, likely to be completed in October, 1954.
- Mistry (Miss) D. K., The Child in Society, begun in June, 1950, completed in June, 1954.
- Mistry. (Miss) J. P., The Family as a Unit of Society, begun in June, 1951, likely to be completed in June, 1955.
- Mujumdar, N. A., A Study in Rural Employment with special reference to Bombay, Karnatak, begun in June, 1953, likely to be completed in June, 1957.
- Murdeswar, A. K., Administrative Problems relating to Nationalization, begun in June, 1949, completed in February, 1953.
- Narain, D., Hindu Social Types, begun in November, 1952, likely to be completed in October, 1956.
- Nayak, R. G., Recent Trends in Central Banking Policy, begun in June, 1950, completed in June, 1952.
- Nayampalli, (Miss) K. S., The Economic Effects of the British Impact on India during 1857-1900, begun in June, 1950, completed in September, 1953.
- Neligigi, S. R., The Role of Religion in Politics, begun in December, 1952, likely to be completed in October, 1956.
- Ojha, P. D., A Study of the Tax Structure of India, begun in October, 1951, likely to be completed in October, 1954.
- Panandikar, (Miss) S. S., Organization and Management of Joint Stock Companies in India, begun in June, 1950, completed in June, 1952.
- Panchanadikar, K. C., Causation in Human Society, begun in June, 1951, likely to be completed in June, 1955.
- Pandya, B. V., Economic Conditions of Backward Classes in Ahmedabad District, begun in June, 1952, likely to be completed in June, 1956.
- Pandya, G. M., Present Position and Future Prospects of Chemical Industries in India, begun in June, 1946, completed in August, 1952.
- Panjwani, H. M., Place of the Judiciary in the Construction of India, begun in November, 1952, likely to be completed in October, 1956.
- Paranjpe, H. K., Public Enterprise in India, begun in August, 1949, completed in September, 1953.
- Pattanshetti, C. C., Role of Banking in India's Industrial Development, begun in June, 1950, completed in February, 1953.
- Paymaster, K. R., State Control of Industries in India, begun in June, 1947, likely to be completed in December, 1954.
- Peter, P. C., Industrial Development of Travancore-Cochin, begun in June, 1950, completed in June, 1952.
- Pradhan, K. V., Taxation in relation to Economic Development, begun in June, 1953, likely to be completed in June, 1957.
- Qurbansingh, (Miss) B., Social Control through Education in India, begun in June, 1952, likely to be completed in June, 1956.

- Rai (Mrs.) S. B., *Foreign Trade of India in Agricultural Commodities*, begun in June, 1952, likely to be completed in June, 1956.
- Rao, K. S., *Measurement of the Structural Changes in an Economy with special reference to India, 1919-1947*, begun in June, 1949, completed in September, 1953.
- Rao, M. S. A., *Changing Pattern of Culture (Malayalam Region)*, begun in June, 1950, completed in October, 1952.
- Rao (Miss) V., *Rural Reactions to Urbanisation*, begun in June, 1952, likely to be completed in June, 1956.
- Sahiar (Miss) G. H., *Social Change with particular reference to Parsi Community*, begun in June, 1951, likely to be completed in June, 1955.
- Sardesai, R. J., *Politics and Government in Goa*, begun in June, 1953, likely to be completed in June, 1957.
- Shah (Miss) K. C., *Pattern of Corporate Savings and Investments in India*, begun in June, 1953, likely to be completed in June, 1957.
- Shah, K. D., *Problems of Land Ownership*, begun in June, 1951, likely to be completed in June, 1955.
- Shah, M. V., *Social Philosophy of Gandhiji*, begun in August, 1949, completed in November, 1953.
- Shah, N. H., *Problems of Low Income Farmers*, begun in June, 1952, likely to be completed in June, 1956.
- Shah, S. M., *Rural Class Structure in India with special reference to Gujarat*, begun in June, 1949, completed in October, 1952.
- Sharma, M. L., *Social Organization in a Refugee Population*, begun in November, 1951, likely to be completed in October, 1955.
- Sherth (Miss) H. B., *Juvenile Delinquency in Bombay State*, begun in June, 1952, likely to be completed in June, 1956.
- Shivamaggi, H. B., *Recent Agrarian Reforms in Bombay with special reference to their Socio-Economic Effects*, begun in June, 1951, likely to be completed in September, 1954.
- Trivikram, T. K. N., *State and Culture*, begun in January, 1952, likely to be completed in October, 1956.
- Vaidya (Miss) L. N., *A Study in the Integration of South and East Asian Economy*, begun in August, 1952, likely to be completed in July, 1956.
- Vora (Mrs.) D. P., *Evolution of Morals in the Epics (Mahabharata and Ramayana)*, begun in June, 1951, likely to be completed in June, 1955.
- Venkatarayappa, K. N., *Social Ecology of Provincial Towns*, begun in September, 1950, completed in September, 1953.
- Vyas, V. S., *Agriculture in a Developing Economy with special reference to India*, begun in June, 1953, likely to be completed in August, 1957.
- Ward, W. V., *Political Parties in India*, begun in September, 1953, likely to be completed in August, 1956.
- Wilson, L. B., *The Bombay Legislature, 1946-52 : A Study in Structure, Composition and Work*, begun in 1951, completed in June, 1953.

M. A.

- Adsule, P. L., *Agricultural Labour in the Indore District (Madhya Bharat)*, begun in June, 1950, completed in October, 1952.

- Appoo (Miss) M. F., Integration of States, begun in June, 1952, likely to be completed in June, 1956.
- Bapista (Miss) E. W., Indian Christian Community with particular reference to the East Indians, begun in November, 1951, likely to be completed in June, 1955.
- Bhuvanchandran, V., Cooperative Central Financing Agencies in Bombay, begun in June, 1950, completed in June, 1953.
- Gulrajani (Miss) L. S., Working of India's Foreign Policy, begun in June, 1952, likely to be completed in June, 1956.
- Haji, D. S., Carriage of the overseas Trade of India, begun in June, 1952, likely to be completed in June, 1956.
- Karat (Mrs.) G. B., History and Development of the Tile Industry in Mangalore, begun in August, 1952, likely to be completed in June, 1954.
- Karnik (Mrs.) K. C., Agricultural Prices in India, begun in June, 1953, likely to be completed in October, 1956.
- Karunakaran, T. K., Sociological Study of an Urban Community, begun in January 1953, likely to be completed in October, 1956.
- Laxminarayan, K. V., Problem of Indian Nationality, begun in December, 1951, completed in April, 1954.
- Manikkar, M. M., The Problem of Rural Credit with special reference to India, begun in June, 1953, likely to be completed in June, 1957.
- Mehta (Mrs.) V., Position of Hindu Widow in Gujarat, begun in June, 1952, likely to be completed in June, 1956.
- Patil, C. S., The Socio-Economic Survey of the Middle Class in Bombay, begun in December, 1950, likely to be completed in December, 1954.
- Punwaney, D. T., Possibilities of Rural Banking in India, begun in June, 1953, likely to be completed in June, 1957.
- Raman, P., Co-operative Central Financing Agencies in the Madras State, begun in June, 1953, likely to be completed in June, 1957.
- Ramanathan, P. G., Social Attitudes of Clerks in the City of Bombay, begun in June, 1952, likely to be completed in June, 1956.
- Rao, I. K., Iron and Steel Industry in India, begun in June, 1953, likely to be completed in June, 1957.
- Sanghavi, P. S. L., Land Problems and Reforms in Saurashtra, begun in December, 1950, likely to be completed in October, 1954.
- Sastri, V. K., Elasticities of Demand in India's Foreign Trade, begun in December, 1951, completed in June, 1954.
- Satyanarayan, K., The Problem of Linguistic State in India begun in June, 1953, likely to be completed in June, 1957.
- Subbarao, C. V., Co-operative Land Mortgage Banks in Mysore, begun in June, 1953, likely to be completed in June, 1957.
- Subramanyam, K., States Finances in India under the New Constitution, begun in August, 1953, to be completed in July, 1957.
- Subramanyan, T. V., Indian Cement Industry, begun in December, 1950, completed in June, 1953.
- Varma, K. K., Economic significance of the Integration of the State with special reference to Travancore-Cochin, begun in November, 1952, likely to be completed in October, 1956.
- Muranjan, S. W., Economics of Garden Crops in Thana District. [for M.Sc. (Agri.)], begun in June, 1951, likely to be completed in September, 1954.

Bharatiya Vidya Bhavan

Sanskrit

Ph. D.

- G. N. Godbole, Indra in Post-Rgvedic Lit., begun in June, 1952, likely to be completed in August, 1954.
- P. S. Sane, Mimamsa rules in practice, begun in June, 1952, likely to be completed in August, 1954.
- M. D. Paradkar, Alankara in Scientific Literature, begun in June, 1952, likely to be completed in August, 1954.
- Mrs. Prabha Joshi, Non-Aryan in Rgveda, begun in June, 1952 likely to be completed in August, 1954.
- Jaydev Yogendra, Samkhya Yoga in Moksa dharmaparvan of the Mahabharata, begun in June, 1952, likely to be completed in March, 1955.
- Miss J. Shroff, A Critical edition of Shraddhaprakasa of Prithvichandra, begun in June, 1952, likely to be completed in March, 1955.
- Miss H. Desai, Rgveda citations in the Tittiriya Samhita, begun in June, 1952, likely to be completed in March, 1955.
- Miss I. Dike, Alankara in Rgveda early beginnings, begun in June, 1953, likely to be completed in March, 1955.
- K. P. Jog, Asvina in Post-Rgveda Lit., begun in June, 1952. likely to be completed in March, 1955.
- Miss P. Kaikini, Bhagavata—a study (Devi Bhagavat), begun in June, 1952, likely to be completed in March, 1955.
- A. B. Jajodia, A critical study of specimens of old Western Rajasthan of 14th and 15th centuries, Prakrit, begun on 12th November, 1952, likely to be completed in 1955.
- H. D. Velankar :
- (1) A Critical translation of Indra Hymns in Rgveda : published in JUB.
 - (2) A revised edition in a book form of some five works on Prakrit metres : being published in Rajasthan Puratathwa series, Jaipur.
 - (3) Mandalikanrapacaritakavya—a critical edition published in Bharatiya Vidya 1953-54.
- Prof. Dr. H. C. Bhayani :
- A critical edition of Svayambhudeva's *Paumacarin* (i.e. 9th century A.D.), the earliest available Apabhramsa epic (2 volumes published so far), Prakrit, published in 1953 in Bombay under Singhi Jain Series, begun in 1943, 2 volumes completed and published so far.
- "Vagvyapar"—a study of various aspects of Gujarati language. Modern Gujarati, published in 1954.
- A critical edition of Shamal's "Madana-Mohana", Old Gujarati, published in 1954 under Bharatiya Vidya Series, begun in 1952.
- Prof. Ramnarayan V. Pathak :
- (1) Brihat Pingal, being printed and shortly to be published by the Gujarati Sahitya Parishad, begun in 1940, completed in 1952—now in press.
 - (2) A critical review of the theory of Rasa as propounded by Kavya-prakasha Literary Criticism, begun in 1950, not yet completed.

T. A. V. Dikshitar, Principal, Sanskrit Mahavidyalaya, Bharatiya Vidya Bhavan, Bombay-1 .

(1) Preparation of a critical edition of Tattwa Tika—a commentary on Tattwaloka—a vedanta Prakarana work, begun in 1952 likely to be completed within six months.

(2) Bishmi Parinaya—a Kavya work, begun in 1952, likely to be completed within six months.

Mrs. Bindu C. Pandit, Origin and Development of the ideas of transmigration in Sanskrit Literature, begun on 9th July, 1952.

V. Anantha Krishna Aiyar, Critical edition of Tilakamanjari of Dhanala Kavya, begun on 15th July, 1952.

Gujarati

Laximiram C. Vyas, Comparative and critical study of Shamal's "Panchdand," begun on 12th July, 1952, expected to be completed by 1955.

Bhrugurai, D. Anjaria, Manishankar Rattanji Bhatt—Life and Literature, begun on 28th March, 1953, expected to be completed by 1955.

Miss Parvati G. Sopra, Madhyakalina Gujarati Sahityana Bhagavata Mulak Kathao, begun on 3rd October, 1953, expected to be completed by 1955.

History

A. D. Pusalker :

The Classical Age, (History) published in Bombay—1953.

The Age of Imperial Kanauj, (History) to be published in Dec. 1954.

Brahmana radition and Kshatriya Tradition, published in Hiriyanna Company, volume, Mysore, 1952.

Samudra in the Rgveda, (Sanskrit) Published in Prabuddha Bharata, March, 1953.

Historical Data in the Krsnacrita Sanskrit and History, published in the Journal of the University of Bombay, September, 1953.

"Sisnadeva" in the Rgveda and Phallus worship in the Indus Valley, Sanskrit and Pre-history, published in Sarup Bharati, Hoshiarpur, 1954.

Visvanathakavikrta Vadesvarodaya-Kavya (in Marathi) Sanskrit, published in Kevalananda Saraswathi Abhinandana Grantha, Wai, 1952.

Pre-Bharata War History of Maharastra (in Marathi) History, published in Maharastra Paricaya, Poona, 1954.

Ancient Indian Culture

R. P. Rege, Social life in Maurian times, begun on 27th November, 1952, likely to be completed in 1955.

S. W. Apte, Ancient Indian Underworld, begun on 4th December, 1952, likely to be completed in 1955.

Seth G. S. Medical College

Biochemistry

Ph. D.

D. B. Desai, Some aspects of Nicotinic Acid Metabolism (a) Biosynthesis of nicotinic acid in germinating seedlings, being sent for publication, begun in 1950, completed in 1952.

- Miss Prema Fatterpaker, Studies in Fat Metabolism (a) Effect of carbohydrate on fat absorption, (b) Nutritive value of Vanaspati, (c) Effect of dietary fat on tissue fat, begun in 1950, completed in 1952, published in Indian Physician, 1952.
- Mrs. Vidya Pradhan, Studies in B-Complex Metabolism in Fish, begun in 1950, completed in 1953, published in Ind. J. Med. Sci. 1951.
- J. D. Jhaveri, Growth and studies of some indigenous strains of Yeast, (a) Effect of protein source on the growth of yeast, begun in 1950, completed in 1953.
- P. G. Tikekar, The metabolic aspects cirrhosis and liver cancer, begun in 1954, likely to be completed in 1956.
- P. J. Mody, The metabolic aspects in cirrhosis and liver cancer, begun in 1954, likely to be completed in 1956.
- V. L. Vinze, Studies in niacin metabolism, begun in 1953, likely to be completed in 1956.
- V. S. Raut, Studies in B complex metabolism in cereals and pulses, begun in 1953, likely to be completed in 1954.
- D. S. Nadkarani, Nicotinic Acid Metabolism in certain diseases, begun in 1953, likely to be completed in 1955.
- S. J. Prabhu, Studies in metabolic inhibition, begun in 1954, likely to be completed in 1956.
- B. D. Poonekar, Some metabolic aspects of vitamin B12, begun in 1954, likely to be completed in 1956.

M. Sc.

- P. G. Tikekar, The effect of Methyl Cholanthrene on liver and enzyme metabolism in rats, (a) The effects on methionine and choline and content of liver, (b) The effect on the absorption activity in blood, begun in 1949, completed in 1952.
- M. K. Kelkar, Studies in Calcium and Phosphorous Metabolism, (a) The phosphatase (alkali) content in normal and rachitic infant, (b) Effect of graded dose of Calciferol on Ca and Phosphorous metabolism in rats, begun in 1950, completed in 1952.
- B. Y. Nadkarani, Physiological availability of essential nutrients, (a) Physiological availability of nicotinic acid, Thiamin and Riboflavin from cereals and pulses, begun in 1950, completed in 1952.
- Miss S. Bharani, Studies in the Precursor of nicotine acid, begun in 1946, completed in 1949.
- Miss Shanta Kelkar, Studies in Metabolic Inhibition, (1) Cocarboxylase inhibition by proteins and certain fish enzymes, begun in 1950, completed in 1953, published in Current Science.
- V. M. Damle, Studies in Calcium and Phosphorus Metabolism, (1) The effect of toxic doses of Calciferol on nitrogen excretion, begun in 1950, likely to be completed in 1954.
- K. R. Juveale, Progesterone metabolism in women under different conditions, begun in 1950, likely to be completed in 1954.
- V. S. Raut, The effect of strain on the vitamin contents of grains, begun in 1951, completed in 1953.
- D. S. Nadkarni, The effect of Protein metabolism on urea clearance in human subjects, begun in 1950, completed in 1953.

- M. R. Parulekar, The effect of media on vitamin contents of indigenous strains of Yeast, begun in 1951, likely to be completed in 1954.
- S. M. Vellary, Studies in Nitrogen Metabolism, The effect of strains on the protein value of cereals and pulses, begun in 1951, likely to be completed in 1954.
- D. S. Khale, Studies in Fat Metabolism, (a) Stability of Vit. A (synth) in Vanaspati, (b) The effect of cholesterol feeding on tissues, sterol in rabbits, begun in 1951, likely to be completed in 1954.
- Miss J. Kumana, Studies in Nitrogen Metabolism with special reference to amino acids, begun in 1951, likely to be completed in 1954.
- Miss S. Ganapathy, Utilization of Protein and non-protein nitrogen, begun in 1951, likely to be completed in 1955.
- Miss M. Rao, Studies in protein and amino acid metabolism, begun in 1953, likely to be completed in 1955.
- Miss P. Bhatia, Studies in B complex metabolism, begun in 1953, likely to be completed in 1955.

Animal Physiology

- Dr. A. C. Duarte-Monteiro, Asst. Professor of Physiology, Some aspects of histological studies of islets of Langerhans, begun in 1949, completed in 1952, being sent for publication.

Medicine

- Dr. J. C. Patel, (Honorary Physician, K. M. E. Hospital and Hon. Lecturer in Medicine) :
- (1) Chloroquine in the treatment of amoebic liver abscess, published in British Medical Journal, April 11, 1953, Vol. 1, p. 811.
 - (2) Corticotropin (ACTH) in severe Tetanus, published in Indian Journal of Medical Sciences, Vol. 8, No. 1, January, 1954, p. 1-14.
 - (3) Standardization and Assay of Liver Extract, published in Indian Journal of Pharmacy, Vol. XVI, No. 1, 1954.
 - (4) Calcium, Phosphorus and Alkaline Phosphatase Levels in the Sera of five hundred and forty-five normal Indian Children, published in Indian Journal of Medical Sciences, Vol. 8, No. 4, April, 1954, pp. 214-219.
 - (5) Ankylostomiasis in India : A review with suggestions for future research, published in Indian Journal of Medical Research, Vol. 42, April, 1954, p. 279.
 - (6) Treatment of Malaria with a single dose of Amodiaquin, (Camoquin), to be published in the Indian Journal of Malariology.

Pathology Department

- Dr. D. D. Banker, Assistant Prof. of Path. and Bact., Bombay University, Teacher in Microbiology, Bacteriophage typing of Salmonella paratyphi A, begun in 1948.
- Miss S. M. Pathak, Study in Incidence and Nature of Coxsackie Virus Infection in Bombay City, begun in 1952, likely to be completed in 1955.
- Miss S. C. Marunnarakkal, Vi bacteriophage typing of Salmonella typhosa with special reference to untypable strains, begun in 1952, likely to be completed in 1954.

Miss N. A. Paralkar, Cultivation of *Endamoeba histolytica* in the laboratory and the sero diagnosis of amoebiasis, begun in 1953, likely to be completed in 1955.

Psychiatric Department

- Dr. N. S. Vahia with Dr. M. R. Gaitonde, Narcotherapy, begun in 1952, likely to be completed in 1954.
 Dr. N. S. Vahia with Dr. L. D. Dhawale, Value of electro-encephalography in Epilepsy, begun in 1953, likely to be completed in 1954.
 Dr. N. S. Vahia and others, Relative value of cardiazole and convulsion treatment in Psychosis, begun in 1953, likely to be completed in 1954.

Pharmacology

- W. B. Bhawe, Aristolochia alkaloid causing peristalsis and hypotension begun in 1953, likely to be completed in 1954.
 Bhikaji B. Gaitonde :
 Effect of antibiotic nutritional supplements in cirrhosis of the liver, for M.D. begun in 1953, likely to be completed in 1954, thesis submitted to Bombay University, published in J. Lab. Clin. Med.,
 Biological assay of R. Serpentina, begun in 1953, likely to be completed in 1954.
 Rajaninath S. Satoskar :
 Action of intravenous desoxycorticosterone, begun in 1954.
 Effect of antibiotic nutritional supplements on plasma proteins, begun in 1953, likely to be completed in 1954, published in Antibiotics and Chemotherapy, Indian J. M. Sc.
 Roger A. Lewis, Treatment of tetanus with adrenal hormones, begun in 1953, likely to be completed in 1955, published in Indian J. M. Sc., J. Am. Med. Ass., Gosumec M. J.
 J. C. Merchant and G. V. Kamath, Effect of drugs on liver diseases due to Cl_4 , begun in 1954, likely to be completed in 1955.

The D. G. Ruparel College

Gujarati

(Mediaeval period poet)

Ph. D.

Jani Ramesh N., Lecturer in Gujarati, Raje—A Study, begun in 1949, completed in October, 1949.

The D. & H. National College

Chemistry

Ph. D.

Singh P. P., Reaction of various supass with Histidine, studied potentiometrically and verified with polarometer, begun in 1953, likely to be completed in 1955.

M. Sc.

Miss Gidwani, M. P., Influence of Glycrophosphoric and corresponding orthophosphoric acid on the physico-chemical properties of isoelectric gelatin, begun in 1952, completed in 1954, thesis accepted and the degree to be conferred in August, 1954.

Economics**Ph. D.**

P. D. Ojha, A study of the Tax structure of India (with special reference to Central taxes), begun in 1951, likely to be completed in 1954.

Elphinstone College**Economics****Ph. D.**

Hari Krishna Paranjape, Lecturer in Economics, Public Enterprise in India, begun in 1949, completed in September, 1953.

English Literature**Ph. D.**

Mutalik, F. W., Bain, his life and works, begun in early 1954, likely to be completed in 1956 or 1957.

G. N. Vyas, Indian Life as presented in Modern English Fiction, i.e. from 1890 to the present day, begun in July, 1953, likely to be completed in 1956.

S. K. Desai, The Theme of Childhood in Modern English Fiction, begun in July, 1953, likely to be completed in 1955 or 1956.

J. M. Lyle, Religion in the Modern English Novel, begun in July, 1954, likely to be completed in 1956 or 1957.

History**Ph. D.**

J. P. de Souza, The Device of the Eagle in Indo-Mediterranean Civilizations and its ramifications, begun in 1953, likely to be completed in 1955.

Physics**Ph. D.**

Dr. M. M. Paranjape, First Minimum in Mie Scattering as a Measure of the dropsizes begun in 1950, completed in 1953, published in Bombay University Journal Vol. XXII Pt. 5 March, 1954.

Marathi**Ph. D.**

R. V. Herwadnar, A study of the Marathi Bakhar Literature, begun in 1952, likely to be completed in 1954.

- Mahajan, Shrimad Bhagawata and its influence on Marathi Literature, begun in 1952, not ready yet.
- Shrimathi C. Gupta, The comic and comedy in Marathi literature, begun in 1952, not ready yet.
- Kumari Chawathe, A literary study of Mr. Walerkar's works, begun in 1953, not ready yet.

Urdu

Ph. D.

- A. N. Jafree, Mathnavi-i-Khub Tarang by Mian Khub Muhammad Chishti (A critical edition of with the life of the author and a study of his other works), begun in December, 1952, likely to be completed by the end of 1954.

Zoology

M. Sc.

- Kum. F. Shaik Mohammed, Study of Bombay Prawns, begun in 1952, likely to be completed in 1954.
- V. B. Tembe, Precoel digestion in Scorpion (*Buthus tamulus*), begun in 1952, completed in 1953, Abstract in Indian Science Congress Session of 1954.
- Kum. A. K. Vaidya :
- Development of *Alphitobias disperimus* (Panz) under controlled temperature & humidity, begun in 1950, completed in 1952.
- Morphology & Anatomy of *Alphitobias Disparius* (Panz), begun in 1948, completed in 1951, submitted for publication to the Bombay University Journal.
- M. K. Thakur, Binomics of a Forest spider *Nephalia Maculate*, begun in 1950, completed in 1953, submitted for publication to the Bombay Natural History Soc. Journal.

Mathematics

M. P. Heble :

- (1) Generalisation of a theorem of Wiener in Fourier analysis, begun in February 1952, completed in August, 1953.
- (2) On the uniqueness of the representation of a function of two or more variables by a trigonometric integral, begun in March, 1954, likely to be completed by end of June, 1955.

Bhavan's College

Ardhamagadhi

- Dr. A. S. Gopani, (1) Yogaratanakara, (2) Jataka-Samhita, begun in 1949, cannot definitely say when they will be published.

Botany

M. Sc.

- Miss I. L. Bhagat, Embryological studies in the family cucurbitaceae, begun in 1949.
- D. B. Choksi, Embryological studies in the family of Anonaceae, begun in June, 1949, completed in 1952.
- Miss N. J. Hodiwala, Contribution to the embroyology of Verbinaceae, begun in November, 1951.
- Miss N. K. Parulekar, Anatomy of convolulaceae and solanaceac begun in March, 1948, completed in March, 1953.
- N. K. Shrivastav, Embryological work in the family Euphor biaceae, begun in July, 1949, completed in July, 1953.
- D. B. Telang, Embryological studies in Monocotyledons, begun in July, 1949, completed in December, 1953.
- V. M. Sukhawala, Embryological studies in the family vitaceae, begun in July, 1949, completed in April, 1953.

Gujarati Literature

- Dr. Chandrakant Mehta, Professor, Forms of literature in mediaeval Gujarati, for Ph.D., begun in 1947, completed in 1951.

History

- Dr. A. K. Majumdar, Chaulukyas of Gujarat, for D. Phil., completed in 1952, being published by Bharatiya Vidya Bhavan.

Haffkine Institute

Biochemistry

Ph. D.

- R. B. M. Colah, Use of indigenous lactobacilli for vitamin assays, begun in 1946, completed in December, 1953.
- Prof. S. P. Deshpande, Mineral deficiencies of cattle and sheep in Bombay State, begun in November, 1952, likely to be completed in January, 1956.

M. Sc.

- Dr. S. S. Rao, (Guide), Purification of Antisera, begun in April 1954, likely to be completed in 1955, not yet published.
- M. E. Kulkarni, Biochemical reactions in Venoms and Antivenins using Oudin's gel diffusion technique, begun in April, 1952, likely to be completed in April, 1955, published in Current Sc. 23, 190, 1954.
- V. Y. More, Extraction of lipids of Sera : Removal of alphaglobulins ; Effect of Bentonite treatment on serum lipids, begun in April 1952, likely to be completed in April, 1955, published in Current Sc. 22, 113, 1953.
- Miss R. S. Vakil, Dextran producing organisms, begun in October, 1951, completed in October, 1953, not published yet.

- N. V. Bhagwan, Antigens of plague organisms, begun in December 1952, completed in April, 1954, not published yet.
- M. S. Samant, Syphilitic antigens, begun in July, 1952, likely to be completed in July, 1954, not published yet.
- M. S. Madiwale, Chemical estimation of folic acid, begun in January, 1953, not yet complete, not published yet.
- D. V. Rajadhyaksha, Antigens in Cholera begun in June, 1953, not yet complete.
- R. S. Karbhari, Antigens in Typhoid, begun in June, 1953, not yet complete.
- C. J. Karkhanis, The effect of blood loss on Indian Blood Donors, begun in December, 1952, likely to be completed in December, 1954.
- S. R. Wagle, Antibiotics and Vitamin A metabolism, begun in July, 1953, likely to be completed in March, 1955.

Microbiology

M. Sc.

- Dr. S. S. Rao, (Guide), Electrophoresis—Paper and free electrophoresis of different substances, published in J. Ind. Med. Assn. 22, 433, 1953, Curr. Sc. 22, 274, 1953.
- H. K. Mahtre, Factors affecting the Production of Tetanus Toxin, begun in January, 1954, likely to be completed in 1956.
- P. Y. Dighe, Study of Influenza viruses with special reference to laboratory diagnosis, begun in July 1952, likely to be completed in October, 1954.
- S. M. Vaidya, A study of the antibiotic properties of some plants and bacteria, begun in December, 1952, likely to be completed in January, 1955.
- K. M. Khemani, The study of potency of Antirabic vaccines, begun in August, 1952, likely to be completed in 1955.
- Kumari R. D. Metha, Studies in Plague, begun in March, 1954, likely to be completed in March, 1956, not yet published.

Bacteriology

Ph. D.

- Dr. D. W. Soman, Rickettsial diseases of man, Laboratory aspect of diagnosis, begun in March, 1950, completed in October, 1953, Some papers published in Ind. Med. Gaz.
- Mrs. Shanta S. Rao, Action of crystalline enzymes on Bacterial antigens and antibodies, begun in April, 1950, completed in April, 1953, published in Ind. J. Med. Res. Jan. 1953.

Organic Chemistry (Chemotherapy)

Ph. D.

- K. D. Kulkarni, Studies in the Chemistry of Thiazoles and related compounds, begun in 1946, completed in June, 1953, published in Part (I) Curr. Sc., 21, 314, 1952; Proc. Ind. Acad. Sci., 37 A, 758, 1953. 38 A, 45, 1953, 38 A, 58, 1953.

M. Sc.

- V. M. Patki, Chemotherapy of Intestinal Infections, begun in 1946, completed in October, 1952, not yet published.
- S. S. Sabnis, Chemotherapy of Tuberculosis (Synthesis of para-aminosalicylic acid and derivatives thereof), begun in 1949, completed in November, 1952, not yet published.
- D. G. Bapat, Synthesis of benzimidazoles and derivatives thereof, begun in 1949, likely to be completed in June, 1954, not yet published.
- N. J. Sardesai, Synthesis of sulphonamides of therapeutic value, begun in 1949, likely to be completed in June, 1954, not yet published.
- M. Y. Mhasalkar, Studies in the chemistry of pyrimidines and related compounds (Vitamin B1 like compounds), begun in 1950, likely to be completed in June, 1955, not yet published.

Zoology**Ph. D.**

- H. M. Pandit, Study of Indian Poisonous Snakes, begun in October, 1952.
- M. S. Gokale, Study of Bombay rodents with special reference to the external parasites, begun in January, 1954.

M. Sc.

- N. E. Vad, Study of Indian Poisonous Snakes begun in October, 1952, likely to be completed in December, 1955.
- R. R. Godbole, Insecticides with special reference to pulicides, Pyrethrum, begun in August, 1953, likely to be completed in December, 1955.
- K. V. Tonpi, Study of Arthropods of Medical Importance, begun in November, 1952, likely to be completed in December, 1954.

The Indian Institute of Education, Bombay**Education****Ph. D.**

- N. R. Parasnis, Professor, An Educational Survey of Thana Libraries in the City of Bombay, begun in May, 1951, likely to be completed in 1954.
- G. S. Dhar, Professor, Finance and Administration of Secondary Education, begun in November, 1950, likely to be completed in 1955.
- V. R. Gokhale, Professor, Factional analysis of Geometrical Tests, begun in July, 1951, to be completed in 1954.
- N. G. Joshi, Teacher, Education of Workers and their children in the Industrial area of the City of Bombay, begun in July, 1951, likely to be completed in 1955.
- N. N. Shukla, Professor, Standardisation of Tests of Physical abilities and study of heights and weights of boys in Bombay State, begun in November, 1949, likely to be completed in 1955.

- K. G. Desai, Professor, Standardisation of Group Tests of Intelligence in Gujarati, begun in July, 1951, completed in 1953.
- K. R. Metha, Teacher, Language Development of Gujarati Children upto the age of 12, begun in August, 1951, likely to be completed in 1955.
- G. R. Sontake, Teacher, Psychological Sense of Colour, begun in November, 1951, likely to be completed in 1955.
- Miss F. Thakurdas, Teacher, Federal Aid to Education, begun in September, 1949, to be completed in 1954.
- M. Y. Bhide, Professor, The Problems of Rural Education with specific reference to the problems of poor and deserving students and their inter-relationship with the educational organisation in urban areas, begun in May, 1951, likely to be completed in 1955.
- Miss A. R. Italia, Teacher, The Organisation and the use of Public Libraries in the City of Bombay, begun in May, 1951, likely to be completed in 1955.
- S. S. Gaikawad, Teacher, Education of Scheduled Castes in the State of Bombay, begun in August, 1952, likely to be completed in 1955.
- N. A. Deshpande, Professor, The Jain System of Education, begun in August, 1952, likely to be completed in 1955.
- P. V. Rao, Teacher, Origin and Development of Nationalistic Trend in Education in India, begun in December, 1952, likely to be completed in 1956.
- M. A. Dalvi, Teacher, Commercial Education in India (Below the University Stage) with special reference to the Bombay State, begun in December, 1952, likely to be completed in 1955.
- Kumari T. J. Bhatt, Teacher, Growth of Secondary Education of Females in India in the British Period with specific reference to the Bombay Province, begun in April, 1953, likely to be completed in 1956.
- G. H. Nafda, Teacher, Standardisation of Performance Tests of Intelligence, begun in April, 1953, likely to be completed in 1956.
- R. R. Choitharamani, Teacher Education in India—Its origin and progress—present and future, begun in June, 1953, likely to be completed in 1956.
- S. D. Doshi, Teacher, The Primary Education in the Municipalities of the State of Bombay—its past, present and future, begun in August, 1953, likely to be completed in 1956.
- D. B. Kothiwale, Professor, The Ideal and Practice of Health, Physical Education and Recreation in Ancient Times in India, begun in March, 1954, likely to be completed in 1956.
- Shrimati T. V. Sabnis, Professor, Standardisation of Physical Efficiency Tests, for Girls—8 to 17 years of age, begun in May, 1954, likely to be completed in 1956.

M. Ed.

- A. J. Joshi, Teacher, Group Tests of Intelligence for Gujarati Children, begun in April, 1949, completed in 1953.
- A. H. Mulla, Teacher, Difficulties of Secondary Teachers in the State of Bombay, begun in March, 1949, completed in 1953.

- J. B. Tannu, Supervising Officer, Bombay Education Department, Wastage in Primary Schools, begun in July, 1949, completed in 1953.
- G. C. Wagh, Teacher, Critical Survey of the Teaching of Geography in the State of Bombay with reference to Text Books, begun in September, 1949, likely to be completed in 1955.
- Kumari A. N. Gandhi, Teacher, Psychology of the Mentally Handicapped Children, begun in July, 1949, likely to be completed in 1955.
- Shrimati M. G. Apte, Teacher, Growth of National Education in India, begun in July, 1949, completed in 1953.
- E. L. D'Souza, Teacher, Religion in Modern Education in India and Abroad, begun in June, 1949, completed in 1954.
- K. A. Dandekar, Supervising Officer, Bombay Social Education Committee, The Reading Interests and Aptitudes of Adults, begun in November, 1951 likely to be completed in 1955.
- Shrimati Satha Rata, Teacher, An Analysis of the Attitudes of High School Pupils to the several school subjects and their relation to pupils' attainments, begun in April, 1953, likely to be completed in 1956.
- P. J. Rajdev, Teacher, A Study of social and academic Background of delinquency in secondary school children, begun in April, 1953, likely to be completed in 1956.
- Shrimati K. W. Solanki, Supervising Officer, Education Department, Bombay, Position and Scope of Physical Education in the State of Bombay, begun in August, 1953, likely to be completed in 1956.
- V. K. Sabnis, Supervising Officer, Education Department, Bombay, The History of Language Text Books (Marathi) for Primary Schools in the State of Bombay with special reference to the growth of curriculum, begun in August, 1953, likely to be completed in 1956.

Indian Veterinary Research Institute

Animal Husbandry

M. Sc.

- L. D. Ahuja, Farm Superintendent, Dairy Experimental Hariana Herd, I.V.R.I., Izatnagar, Studies on some aspects of reproductive physiology of Hariana Cattle (females), begun in May, 1954, likely to be completed in May, 1955.
- A. B. Moorjani, Investigations on the effect of work on the milk yield, health and reproduction of the dairy cows of the Hariana breed, begun in April, 1953, likely to be completed in June, 1955.

Biochemistry

Ph. D.

- Dr. S. Bose, Teacher, Preservation of Shell Eggs, begun in 1950, likely to be completed by the end of 1954.
- B. Sahai, Investigations on subsidiary feeds and conservation and utilization of green forage and coarse roughage by ensilage, begun in 1949.
- Indra Kumar, Utilization of non-protein nitrogen compounds as protein substitutes for ruminants, begun in 1949.

- S. S. Negi, Investigations into factors affecting the nutritive value of paddy straw as cattle feed, begun in 1950, to be submitted shortly.
- M. N. D. Goswami, The nutritive value of Paninrich feeds with special reference to the utilisation of protein in animals, begun in 1952, to be submitted shortly.
- Shyam Kumar, Electrolyte balance in health and disease, begun in 1952.
- Kedar Nath, Fat requirements of ruminants, begun in 1952.

Physiology

Ph. D.

- M. M. Goil, Metabolic behaviour of some endoparasites, begun in 1953.
- Shyam Kumar, Electrolyte balance in health and disease, begun in 1952.

Veterinary Helminthology

Ph. D.

- C. T. Peter, Assistant Research Officer (Helminthology), I.V.R.I., Izatnagar, Three papers read before the Medical and Veterinary Section of the 42nd Indian Science Congress, Hyderabad (Deccan). A thesis on the subject submitted to the Madras University, has been approved for the Ph.D. Degree, begun in 1951, to be completed in 1954.

Zoology

Ph. D.

- Sailesh Chandra Dutt, Assistant Research Officer, Division of Parasitology, I.V.R.I., Studies on two Mammalian Schistosomes, begun in June, 1950, completed in March, 1954.
- Krishna Nandan Mehra, Division of Parasitology, I.V.R.I., Studies on some flatworms (platyhelminthes) Parasitic in Indian hosts of economic importance, begun in June, 1950, likely to be completed in 1955.
- Parimal Kumar Sinha, Research Assistant, I.V.R.I., Izatnagar, Studies on important helminth parasites of poultry in India, begun in March, 1950, submitted on 14th February, 1954 and has been declared eligible for the degree by the University on 2nd June, 1954.
- Prabhakar Gajanarao Deo, Research Asst., Division of Parasitology, Studies on important helminth parasites of poultry in India, begun in March, 1950.

Institute of Plant Industry, Indore

Botany

M. Sc.

- A. D. Saini, P. D. Gadhari and R. Sankaran, Studies in Foliar Anatomy of Cotton, begun in 1950, completed in 1952.

Plant Breeding & Genetics

M. Sc.

H. P. Bhatia, P. D. Gadkari, Acclimatisation of Ghirsutum in Malwa, begun in 1950, likely to be completed in 1954.

Khalsa College

Physics

Ph. D.

M. B. B. Karnik, Lecturer in Physics, Electrical oscillations in A.C. Discharge, begun in 1951, likely to be completed in October, 1954, Part I published in the Proceedings of Indian Science Congress 1954.

English

Mrs. D. Patwardhan, Lecturer in English, Mrs. F. A. Steel—her work and times, begun in December, 1952, likely to be completed in December, 1955.

Sanskrit

P. S. Sane, Lecturer in Sanskrit, Mimamsa rules in Practice, begun in June, 1952, likely to be completed in December, 1954.

Marathi Sanshodan Mandal

Mumbai Marathi Grantha Sangrahalaya

Marathi Language and Literature

Ph. D.

Anat Kakba Prielkar, Director and Reader, Critical edition of Mukteswara's Mahabharata, Mukteswari Adiparva Fascicules I & II, published by the Marathi Sanshodhan Mandal.

Krishnaji Bhikaji Kulkarni, Lecturer in Kisanchand Chellaram College, Bombay, Text books in Marathi in the 19th Century, their authors and their effect on the structure of the Marathi language, begun on 12th August, 1948, submitted and the Degree was conferred on 11th August, 1953.

Prabhakar Ramachandra Kokil, Autobiographical elements and autographics in Marathi literature, begun in 11th August, 1949 likely to be completed on 10th August, 1954.

Shriniwas Madhusudan Pingé, Lecturer in P.E.S. College, Aurangabad, Study of and Contribution to the Marathi language and literature by the Europeans, begun on 10th November, 1949, submitted and the degree was conferred on 28th July, 1953.

Sakharam Gangadhar Malshe, Lecturer in Siddarth College, Bombay, Linguistic and Literary study of Father Thomas Stephen's Marathi Christian Purana, begun on 6th December, 1950, likely to be completed on 5th December, 1954.

Mrs. Saroj Shende, Lecturer in Ismael College, Andheri, A Critical study of Mahabharata and other works of Vishnudasnama, begun on 4th April, 1953, likely to be completed on 3rd April, 1957.

Miss Kamal Desai, Fellow, Satire in Marathi Literature, begun on 17th September, 1953, likely to be completed on 16th September, 1957.

Krishnajee Anant Medak, Student, Linguistic Survey of Marathi dialects in the Central Konkan, begun on 6th July, 1953, likely to be completed on 5th July, 1957.

Ramnarayan Ruia College

Mathematical Physics

Mr. N. D. Sengupta, Lecturer in Physics,

1. On the variation of rest mass of electron in the electromagnetic field, note read in the Indian Science Congress session, 1953.

2. On the solution of electron in the field of electromagnetic Radiation, published in Bull. Cal. Math. Society-44-132-1952.

3. On the scattering of electromagnetic waves by free electron, published in Bull. Cal. Math. Society-44-175-1952.

Sanskrit

Ph. D.

Miss Hemalata Yeshwantrao Desai, Lecturer in Sanskrit and Ardhamagadhi, The Rigveda mantras in the Taittiriya Samhita—their setting old and new, begun in 1952, likely to be completed in 1955.

Mr. M. D. Paradkar, Lecturer in Sanskrit, Role of the simile in Scientific literature (Manusmriti and Brahmasutra Sankara Bhasya), begun in 1951, likely to be completed in December, 1954.

Mr. M. V. Mahashabde, Lecturer in Sanskrit and Ardhamagadhi, Vedic quotations in the Mahabhasya of Patanjali, begun in 1954, likely to be completed in 1957.

Research and Control Division, Raptakos, Brett & Co., Ltd., Worli

Chemistry

M. Sc.

Fatterbekar, M.S., Student, Stability of Vitamin A in aqueous media, begun in September, 1951, likely to be completed in July, 1954.

Pinto P. V. C., Student, Vitamin B12 production by an indigenous Actinomycete, begun in December, 1952, likely to be completed in December, 1954.

Shenoy K. G., Student, Vitamin B12 studies, published in Ind. J. Pharm. 16, 11 (1954), Arch. Biochem. Biophys. July, 1954, begun in September, 1951, likely to be completed in July, 1954.

Ramasarma G. B., Teacher, Vitamin B12 studies, published in Ind. J. Pharm. 16, 11 (1954), Arch. Biochem. Biophys. July, 1954.

Secondary Training College, Bombay Education

Ph. D.

Kumari Lalita Sanzgiri, Children's literature in Marathi, begun on 16th July, 1951, likely to be completed in May, 1955.

Shri M. H. Patwardhan, Efficiency of the Primary Teachers, begun on 16th July, 1951, likely to be completed in May, 1955.

Shri R. T. Rawal, Vocabulary of Gujarati Children of 12 years, begun on 12th August, 1953, likely to be completed in May, 1956.

Shri S. B. Bhide, To assess the educational value of different Audio-Visual Aids, begun on 17th July, 1952, likely to be completed in May, 1955.

M. Ed.

Shri Gulabrao Raghunath Mandre, The Training of teachers in the province of Bombay, begun on 20th July, 1948, completed in 1953.

St. Xavier's College Botany (*Embryology*)

Ph. D.

G. L. Shah, Lecturer in Botany, Embryology or Umbellifers on "Floral organogeny and embryology of *Coriandrum sativum*" Linn. Submitted to the University of Bombay in the form of a thesis for the degree of M.Sc., some part of it is published, begun since 1950, likely to be completed by 1956.

Economics

Mr. Hannan Ezekiel, Lecturer in Economics, Social Accounting and analysis of National Income, for Ph.D., with special reference to Under-developed Economics, begun in June, 1953, likely to be completed in April, 1955.

Mr. R. K. Hazari, Tutor in Economics.

1. The Economics of Estate Farming, for M.A. (in lieu of one paper in Agricultural Economics) published in May, 1954, by Indian Society of Agricultural Economics, Bombay, begun in July, 1951, completed in March, 1953.

2. The Cotton Mills of India : 1854 to 1954, (Research work done as associate of the author S. D. Metha), published in March, 1954, Textile Association (India) Bombay, begun in August, 1953, completed in December, 1953.

3. The Native of Underdevelopment : An Essay on Economic growth, for Ph.D., begun in July, 1953, likely to be completed in October, 1955.

Geology

R. N. Sukeswala, Asst. Professor of Geology,

1. Notes on the Petrography and Fields occurrence of the Rocks of Bombay Island, Bombay, accepted for publication in the Mining,

Geological and Metallurgical Institute of India, Calcutta, completed in 1953.

2. Preliminary Notes on the Rocks (Deccan Traps) of Parnera, Sarangpur, Dungri, Billimora and Gundhevi, Surat Dist., Bombay, completed in 1954.

Hindi (*Meera Bai*)

C. L. Prabhat, Lecturer in Hindi, for Ph.D. of Agra University, begun in June, 1953, likely to be completed in June, 1955.

History and Culture

Dr. L. B. Keny, Asst. Professor of History,

1. Magan of the Sumerian Inscription and its identification with India in General and Magadha in particular, published in the Proceedings of the Indian History Congress (1952).

2. Magadhan Trade, published in Indian Historical Research Institute Silver Jubilee Volume (1953).

3. Pali : Its origin and duration, published in Indian History Congress (1953).

Microbiology

(Miss) Freitas, Yvonne, M., Lecturer in Microbiology, Studies on the role of micro-organisms in the deterioration of fish-nets and cordage, for M.Sc., begun in August, 1949, completed in December, 1952.

B. N. Gadiyar, Dermatofungal fungi and occurrence of dermatofungal infection in the city of Bombay, work is in progress, will probably be completed in one year's time.

J. M. D'Souza, A search for antifungal principles in Indian medicinal plants, this work is in progress, will probably be completed in one year's time.

(Miss) S. Mukherji, A contribution to the study of Antiseptics, this work is in progress ; will probably be completed in one year's time.

(Miss) V. Sheth, A search for antibiotics in Indian Soil Bacteria, (a) Acting against gram positive Bacteria, work started this year.

(Miss) B. D. Curravala, A search for Antibiotics in Indian Soil Bacteria, (b) Acting against Gram negative Bacteria, work started this year.

Philosophy

Rev. Fr. A. De Mendonca, S.J., Ph.D., D.D., Post-graduate teacher of Philosophy, Bombay University, Prof. of Philosophy.

(i) Augustinian Platonism, to be read at the Indian P. Congress at Ceylon, begun in May, 1954, likely to be completed in August, 1954.

(ii) An Outline of the Great movement of contemporary Indian Thought, to be published in the French Encyclopaedia of Philosophy, begun in June, 1954, in progress.

(iii) The problem of certitude in St. Augustine's Philosophy, being published by the Journal of the University of Bombay, Arts Number, No. 28, P. 82, 1st Part has appeared, begun in August, 1953, completed.

Sanskrit and Gujarati

Prof. G. C. Jhala, Professor of Sanskrit and Gujarati,

1. Mrchhakatika and Carudatta, published in the Journal of the B. B. Royal Asiatic Society.
2. A note of Karnabhara, published in the Journal of the B. B. Royal Asiatic Society.
3. Humour in Sanskrit Literature, published in Silver Jubilee Vol. of I.H.R.I. Bombay.
4. The problem of the Yajñaphalam, published in the Journal of the B.B.R.A.S.

Sociology

Rev. P. Gisbert, S.J., Professor of Sociology, The Worli Woman, to be published in the Journal of Anthropol. Society of Bombay, begun in December, 1953, likely to be completed in August, 1954.

Rev. Fr. H. Heras, S.J., Director, Indian Historical Research Institute, Prof. of History.

1. Studies in Proto Indo-Mediterranean Culture, published in India.
2. The problem of Ganapati, published in *Tamil Culture*.
3. The Proto-Indian Origin of the Sumerian Civilization, published in the Shashtyabdapoorthy Souvenir in Honour of Sardar K. M. Panikker.
4. The Personality of Yama in the Rgveda, published in Sir Jadunath Sarkar Commemoration Volume.

St. Xavier's Institute of Education

Education

Professor C. N. Patwardhan,

1. Education Administration in India, published in Arya Sanskriti Press, Poona, 1952, begun in 1949.
2. Education in Middle and South East Asia, published in "Progress of Education", Poona, 1952-54, begun in 1950.
3. Analytical Study of Factors governing progress of Education in India "Education", Lucknow, 1954, begun in 1953.
4. Inter-State Study of Education. Administration in India, begun in 1952, likely to be completed in 1955.

Wilson College

Biochemistry

M. Sc.

J. W. Airan, G. V. Joshi, J. Barnabas and R. W. P. Master, Identification of organic acids by circular paper chromatography, published in *Anal. Chem.*, 1953, 25, 659.

J. W. Airan, Application of circular paper chromatography to the study of amino acids in fish protein, published in *J. University, Bombay*, 1953, 21, 5, 5.

J. W. Airan, P. Y. Rangnekar, R. W. P. Master, J. Barnabas, Identification of amino acids in certain parts of the body of the lobster, published in *Science and Culture* 1953, 18, 58.

J. W. Airan, Two-dimension circular paper chromatography, published in *Curr. Sci.* 1953, 22, 51.

J. W. Airan and J. Barnabas, amino acids in Bengal Almond, published in *J. Ind. Chem. Soc., Ind. & News Ed.*, 1953, 16, 127.

J. W. Airan and R. W. P. Master, Chromatographic estimation of amino acids in some marine fishes, published in *J. Ind. Chem. Soc., Ind. & News Ed.* 1953, 16, 63.

J. W. Airan and J. Barnabas, Separation of Maleic and Malonic acids by paper chromatography, published in *Naturwiss* 1953, 19, 510.

J. W. Airan and A. B. A. Karat, Amino Acids in Scylla, published in *Science & Culture*, 1953, 19, 92.

J. W. Airan and J. Barnabas, Estimation of amino acids in tomato fruit by circular paper chromatography, published in *Science & Culture* : 1953, 19, 201.

J. W. Airan, amino acids in the Human Finger nail, published in *J. University, Bombay*, 1953, 22, 3, 26.

J. W. Airan & J. Barnabas, Organic acids and Sugars in *Lycopersicum Esculentum*, published in *J. University, Bombay*, 1953, 22, 3, 29.

J. W. Airan and R. W. P. Master, A note on the distribution of Sulpur in some marine fishes from Bombay, published in *J. University, Bombay*, 1953, 22, 3, 72.

J. W. Airan and D. S. Wagle, A note on a new reagent for the estimation of Copper, published in *J. University, Bombay*, 1953, 22, 3, 71.

J. W. Airan and R. M. Desai, Amino acids in *Pitheco Colobium Dulce* (BENTH) and *Adenсонia Digitata* (LINN), published in *J. University, Bombay*, 1953, 22, 3, 58.

J. W. Airan and T. Abraham, amino acid contents of Bombay Prawns, published in *J. University, Bombay*, 1953, 22, 3, 61.

J. W. Airan and R. M. Desai, Sugars and organic acids in *Adenсонia Digitata* (LINN) Fruit, published in *J. University, Bombay*, 1954, 22, 5, 23.

J. W. Airan and H. M. Desai, Chromatographic estimation of Amino acids in *Momordica Charantia* seed cade, published in *J. University, Bombay*, 1954, 22, 5, 29.

R. W. P. Master, Amino acid in the chitin and the muscle of cockroach, published in *J. University, Bombay*, 1954, 23, 5, 29.

J. W. Airan and T. Abraham, Amino acids in Prawns from Bombay, published in *J. University, Bombay*, 1954, 23, 5, 48.

J. W. Airan and J. Barnabas, Chromatographic separation of Copper, Cobalt and Nickel, published in *Science & Culture*, 1953, 18, 348.

Zoology

Ph. D.

K. M. Alexander, The Gross Chemical Composition of the Skeletal Muscles in some Vertebrates and its Significance, submitted.

S. G. Nair, Biochemical Aspects of Reptilian and Mammalian Blood, submitted.

S. P. Karmarkar, Hoemoposis in the lower Vertebrates, in progress.

- R. S. Pathkoot, Fat metabolism in fishes, in progress.
 A. C. Varkey, Cranial Muscles in fishes, in progress.
 M. T. Mathai, Flight of Bats, in progress.

Botany

G. V. Joshi, Identification of Organic Acids by circular paper chromatography, published in *Analytical Chemistry*, 1953.

G. V. Joshi, A note of Organic Acids of *Riccinus Communis*, published in *Science & Culture*, 1954.

Chemistry

J. K. Wad :—1. Studies in Mutual coagulation, in progress, 2. Studies in hydrolysis of thorium salts, in progress.

R. Barve, Studies in coagulation, in progress.

Gujarati

Raman C. Kothari :—1. A collection of poems (called VRINDAWAN), published by Vora & Co. Ltd., 2. A critical review called "PRACHINA", published by Forbes Sabha.

Marathi

W. L. Kulkarni :—1. A collection of critical essays and evaluations, published by Popular Book Department, Bombay. 2. Several critical articles.

Sanskrit

S. N. Gajendragadkar :—1. Articles to the Bombay University Journal — 1952, 53, and 1954. 2. Articles to the All India Oriental Conference. 3. Articles to the B. B. Royal Asiatic Society Journal.

Physics

Dr. H. J. Taylor and Mr. K. G. Vohra, Measurement of Weak Radioactivities and an Investigation of the Radioactive content of the Air using Proportional Counters, has been submitted for the degree of Ph.D. The apparatus consists of an 'ion collector' and a proportional counter with associated electronic circuits. Measurements have been made on the radioactive content of the free air in Bombay at different seasons. A marked difference in the radioactivity of air during the summer monsoon winds, and north-eastern monsoon winds, has been observed. Further work is in progress.

Dr. J. Alexander and Mr. T. C. Mani. 1. Succeeded in the work undertaken in connection with the growing of large single crystals of alkali-halide salts from the melt. Also succeeded in colouring these crystals by electrons driven from a pointed electrode. The conditions under which such a colourations takes place are being studied systematically.

2. Work in progress on the design and construction of an ultra-violet spectrophotometer using plane reflection grating and U. V. Photocell.

Taraporevala Marine Biological Research
Station, Bombay
Zoology
M. Sc.

Shri B. F. Chhapgar, Taxonomic account and bionomics of crabs of Bombay, begun in September, 1951, likely to be completed in June, 1954.

Kum. Menorama Menon, Comparative anatomy, histology and physiology of alimentary system of some of the Elasmobranchs of Bombay, begun in September, 1951, likely to be completed in July, 1954.

Shri Brig Jaggi, Respiratory adaptations of some Isospondylid fishes of India, begun in August, 1952, likely to be completed in December, 1954.

Shri R. G. Dandekar, Jr. Research Assistant, Certain aspects of the behaviour of some common fish of Bombay with respect to temperature, begun in July, 1953, likely to be completed in July, 1955.

CALCUTTA

Arabic and Persian

Prof. M. Z. Siddiqi, Studies in Medical Literature in Arabic and Persian and the influence of Indian Medical works on them.

Economics

Dr. S. N. Sen, M.A., Ph.D., Socio Economic Survey of the City of Calcutta with special reference to the causes and consequences of urbanisation 1941-1959, in progress.

Arun Kumar Ghosh, Monetary and fiscal policies in a planned economy, work likely to be completed early in 1956.

Dinesh Chandra Sarkar, The Jute Industry and its problems, likely to be completed in 1956.

Sunil Biswas, The problem of capital formation in under-developed countries, likely to be completed in 1956.

Rural banking in India, likely to be completed in 1956.

Education

M.A.

Nilima Rai Chaudhuri, A Comparative Study of the educational views behind the teachings of Rabindranath Tagore and Mahatma Gandhi, 1952.

Baidynath Bhattacharyya, A Critical Study of the World Association for Children, 1952.

Jyotirmoy Ganguly, Development of Reasoning in Children, 1952.

Bishnubrata Bhattacharyya, Intelligence Tests, 1953.

Sudhirchandra Ray, New Approach to Bengali Teaching, 1953.

Sarbari Bhushan Purkait, Objective Method of Teaching History in classes IX & X, 1953.

Sutapa Banerjee, Place of Aesthetics in the Development of Child's personality, 1952.

Romola Lahiry, The Essay Type vs. the New Type Examination, 1953.

English

D. Phil

A. P. O'Brien, G. M. Hopkins.

A. R. Crowel, India and Kipling.

D. N. Chatterjee, Shakespeare's Characters and Contemporary players.

S. N. Banerji, Anti-sentimentalism in 18th century English Drama.

B. Chatterjee, W. B. Yeats.

History

D. Litt

Dr. S. P. Sen, The French in India 1763-1793, begun more than 2 years back.

D. Phil

- T. K. Mukerjee, Relations between the English, the Marathas and the Rana of Gohad (1779-1805), begun about three years back.
- Shrimathi Niharkana Majumdar, The Nizamat in its decline, begun more than two years back.
- N. G. Chaudhuri, Relation of Hyderabad with the East India Company, begun about three years back.
- D. K. Ghosh, Anglo-Afghan Relations (1880-1907), begun about one year back.
- Amitubha Mukherjee, Bengal Renaissance during the first half of the 19th century, begun about 8 months back.
- S. N. Sen, Anglo-Maratha Relations 1772|1782. begun about 6 months back.
- B. Chakravarthi, British Relations with the North Eastern Frontier Tribes, just begun.
- K. Ghatak, Indo-Chinese Trade Relations during the 2nd half of the 18th and the first half of the 19th century, just begun.

Political Science**D. Phil**

- Ajit Kumar Raha, Position of the individuals under International law.
- Kamalaksha Bhattacharya, The Commonwealth and India.
- Bharati Roy, Evolution of Federalism in India.
- Phanibhusan Das, Class structure in relation to Social progress with special reference to India.
- Buddhadeb Bhattacharyya, The Evolution of Mahatma Gandhi's Political Philosophy.
- Nirmal Kumar Bose, Social and Political ideas of William Godwin.
- Niranjan Dhar, The administrative system of East India Company in Bengal during the period from 1774 to 1793.
- Krishnapada Bhattacharya, Development of Legislatures in British India.
- Asokkumar Mustaphi, Social and Political ideas of Thomas Paine.
- Hareram Bhattacharyya, Government of the Trust territories under the U.N. Charter.
- Santibhushan Basu, Study into the Socio-economic roots of the Political ideologies.
- Subhasechandra Basu, The Political Philosophy of Herbert Spencer.
- Maharaj Nagendra Singh, Defence Mechanism in a modern state.
- Jyotsnakumar Mitra, Evolution of the Police System in Bengal with special reference to Calcutta.
- Ausukumar Datta, Social and Political ideas in India during the 19th century.
- Lalitkumar Sen, Refugee Problem.
- Subirchandra Majumdar, Principles of Federalism with special reference to the constitution of India.
- Nirmalchandra Basuraychaudhury, Certain trends in social Legislature of India.
- Bela Dattagupta, Sociology of Marriage Institution in India.
- Amarendranath Mukhopadhyay, Rural-Urban complex with special reference to the transition.
- Krishnalal Basu, Rural Self-Government in Bihar.

- Karunakar Gupta, Theory and practice of collective security since the League up to the present day.
 Khagendrachandra Pal, United Nations as an experiment in international peace and security.
 Sachchidananda Ghosh, Municipal Self-Government in West Bengal.
 Nakuleswar Bandyopadhyay, Studies in Social Synthesis.
 Rani Mukherji, Social and Political ideas of Harold Laski.
 Biswanath Mukerjee, Indian States.
 Pratapkumar Ghosh, The making of the new constitution of India.
 Barindranath Das, Burmese Government and Politics (a study in the constitutional development of modern Burma).
 Amiya Chatterjee, Indian Constitutional Development, 1939-1949.
 Sobhanlal Mukhopadhyay, Political Philosophy of J. S. Mill.
 Kalyani Sen, Social and Political ideas of Bankimchandra.

Sanskrit

Prof. Satkari Mookerjee, M.A., Ph.D.,

- (1) English Translation of *Ātmatattvaviveka*.
- (2) *Impedimentas of Universals*, published in Luxman Swarup Memorial volume.
- (3) *Classifications of logical grounds*, published in Visveswarananda Vedic Sansodhanamandala, Punjab.
- (4) *Sri Ramakrishna*, published in the Bulletin of Ramakrishna Mission Institute of Culture.
- (5) *English Translation and Exposition of Jainasiddhānta dipika*, a work on Jaina Philosophy (in the Press).
- (6) *The significance of Sri Ramakrishna in the history of Religion*, published in the Bulletin, Ramakrishna Mission Institute of Culture.
- (7) "*Sraddhā*", published in the organ of Ramakrishna Asrama, Boranagore, Calcutta.

Dr. Asutosh Sastri, M.A., Ph.D., P.R.S., *Vedantadarsanam-Advaitavāda in Bengali, Part III*.

Pt. Narendra Chandra Vedantatirtha,

- (1) *Nyāya Kusumāñjali, Part I*, Asutosh Sanskrit series, published in 1953.
- (2) *Pratyakshadidhiti*, Asutosh Sanskrit series.
- (3) *Kirnavali* (Asiatic Society).
- (4) *A descriptive catalogue of Sanskrit manuscripts on Philosophy Vol. XI* (Government Collection, Asiatic Society).
- (5) *A descriptive catalogue of Sanskrit manuscripts, Part I, on Philosophy* (Indian Museum collection), published in 1944 (Asiatic Society).

Pandit Krishnagopal Goswami,

- (1) *History of Intercaste marriage approved for Anandaram Borooah Gold Medal*.
- (2) *Bhaktisandarbhā, Translation, etc.*

Dr. Gowrinath Shastri, M.A., P.R.S., D.LITT. (under the guidance of Prof. Satkari Mukerjee) *Sphotabada and the Philosophy of Bhartrhari*.

Kunjagovinda Goswami,

- (1) A study of Vaisnavism from the rise of the Sungas to the fall of the Guptas, Approved for the Griffith Memorial Prize.
- (2) Appointment of Ministers and High Officials in Ancient India, published in I.H.Q., June, 1953.
- (3) A paper on Some Forgotten Cities of Bengal, published in the Bulletin of Ramakrishna Mission Institute of Culture.

Dr. Amareswar Thakur, M.A., Ph.D., Nirukta translation into Bengali, Asutosh Sanskrit series.

Pandit Amarendramohan Tarkateertha, A descriptive catalogue of Sanskrit manuscripts, Part I, published in 1954.

Aniya Kumar Chakravorti, Indian Poetry.

D. Phil

Rambaranjan Mookerjee, Rasa theory of Sanskrit poetics, begun in January, 1953.

Srimati Rama Banerjee, Pratyaksa and Anumāna in Vedānta, begun in June, 1953.

Srimati Sandhya Bhaduri, A critical edition of Rasagangādhara with notes, translation and introduction on Sanskrit poetics, begun in September, 1952.

Srimati Malati Mitra, Vedānta Metaphysics, begun in December, 1952.

Gopikamohan Bhattacharya, Samānyavāda (universals) in Bengali, published in Indian Logic, approved for Rani Ramakrishna Gold Medal, begun in June, 1952.

Bratindu Kumar Sengupta, Theory of Knowledge in Vedānta, begun in January, 1953.

Sitanath Goswami, Bengali Translation of Citsukhi on Neo-Vedāntism, begun in June, 1952.

Satchidananda Mookerjee, Sanskrit Poetics, begun in June, 1952.

Darjeeling Government College

Physics

- S. Sen Gupta, Theoretical Nuclear Physics, begun in May, 1952; Results published in Phys. Rev. 87, 1136, 1952, Curr. Sci. 21, 272, 1952, Zeits fur. Phys. 134, 413, 1953, Phys. Rev. 89, 1296, 1953, Ind. Jour. Theo. Physics, September, 1953.

Manimala Girls' College, Asansol

D. Phil Arts

Miss Pranatidas, Lecturer in Logic, Truth and Reality in Art, begun in 1952.

Miss Jayati Das Gupta, Lecturer in History, Imperial Systems in Ancient India, begun in 1954.

Miss Malati Mitra, Lecturer in Sanskrit, Absolute and Appearance, begun in 1951.

D. Phil Science

Radharaman Basak, Lecturer in Chemistry, Biosynthesis of metabolism of nicotinic acid in moneys, begun in 1954.

Medical College, Calcutta

- Dr. N. C. Roychoudhury, under the guidance of Dr. C. L. Mukherjee, Professor of Midwifery, Medical College, Calcutta, The changes in the relation of Plasma Volume and total intestinal fluid in Toxaemias of pregnancy, begun on 16th April, 1952, completed on 15th April, 1954.
- Dr. Malay Bhusan Ghosh, under the guidance of Dr. P. K. Sen, Professor of Medicine (Tuberculosis), Medical College, Calcutta, Histoplasmosis, started on 7th April, 1953.

Presidency College, Calcutta

Kshudiram Das, Lecturer in Bengali,

- (1) Rabindra Pratibhar Parichay, a book of criticism in Bengali on Rabindranath, published in October, 1953.
- (2) Gadya-Kavita, an article in Bengali on Rabindranath's prose verses, published in Desh, 1953.

Devipada Bhattacharya, Lecturer in Bengali,

- (1) Ekti Durlabh Rachana, an article in Bengali on a rare essay, published in the Visvabharati Patrika, 1953.
- (2) Banga-Sahitye Pratham atmajivani, an article in Bengali on the first biographical work in Bengali, published in Desh, 1954.

Bhudeb Chaudhury, Lecturer in Bengali,

- (1) Bangasahitye Ritikatha, a book in Bengali on the history of Bengali Literature, published in 1954.
- (2) Pyarichand Mitrer Sahitye Banglar Samajehitra, an article in Bengali on the social background of Pyarichand Mitra's writings, published in Betar Jagat Dol Sankhya, 1360.
- (3) Anandamath O Bangalir Svadhinata, an article in Bengali on Bankimchandra's Anandamath and our independence, published in Jaysri, sravan, 1361.

Botany

Publications of Dr. H. L. Chakravarty,

- (1) Glandular Probract in *Coccinia Cordifolia* Linn, published in Cogn. Science and Culture, (1951) 17, 225-226, published in 1952.
- (2) Indian Ophioglossum, Taxonomy & Distribution, published in Bull. Bot. Soc. (1951) 5, 1-10, published in 1953.
- (3) *Indian Corchorus*, Taxonomy & Distribution, published in Bull. Beng. Bot. Soc. (1951) 2, 75-86, published in 1953.
- (4) Morphology of the Stamens of *Coccinia Cordifolia* 'Linn', published in Cogn. Bull. Beng. Bot. Soc. (1951) 5, 31-50, published in 1953.
- (5) New finds of Indian Cucurbitaceae, published in Journ. Bomb. Nat. Hist. (1952) Sec. 50, No. 4. 894-901.
- (6) Morphology of the Stamens in *Benincasa hispida* (Thump) published in Cogn. Bull. Bang. Bot. Soc. (1952), 6, 53-56, published in 1954.

Publications of Dr. J. K. Choudhury :

- (1) On the total nitrogen content of jute plants, (*Corchorus Capsularis* L.) published in Bull. Bot. Soc. Beng., Vol. 6, page 71, 1952.
- (2) Abnormal tricotyledonous embryo and the morphological structure of normal fruit and seed of *Cinnamomum camphora* F. Nees—*Science & Culture*, Vol. 19, page 159, 1953.
- (3) Camphor and Camphor oil from *Ocimum kilimandscharicum* Guerke—*Ibid*, Vol. 19, page 354, 1954.

Publications of Sri H. C. Gangulee :

- (1) Rice cultivation in U.S.A., published in the Journal of the Science Club, 1954, Vol. 7, pages 130-135.
- (2) Types of flowering behaviour in rice (*Oryza Sativa* Linn) and the distinctiveness of the Aman type, published in Current Science, 1954, Vol. 23, pages 80-81.

Chemistry

- S. C. Chakravarty & Dr. R. Chatterjee, Structures of Epipodophyllo toxin and Epi-piso-podo-phyllin, published in Science and Culture, 1952.
- S. C. Chakravarty & Dr. R. Chatterjee, Resin Sikkimensis I : Sikkimotokin, a Lactone from P. Sikkimensis, published in Journal of American Pharmaceutical Association, 41, 415, 1952.
- Dr. S. C. Shome, Electrolytic Zinc powder, published in Indian Science Congress Association, January, 1954.
- Dr. S. C. Shome, Inhibition of Corrosion of metals, published in Symposium of "Electrochemical processes and its application to Indian Industry", March, 1954, page 72.
- Dr. Nirmalendu Nath Ray, Amiya Kanti Ghosh & Grihapati Mitra, Fluoberyllates and their analogy with sulphates Part VII, Complex-compounds of fluoberyllates with hexamethylene tetramine, pyridine and quinotone, published in Journal, Indian Chemical Society, 30, 221-2, March 1953.
- Dr. Nirmalendu Nath Ray and Grihapati Mitra, Fluoberyllates and their analogy with Sulphates, Part VIII, Additive compounds of amino fluoberyllates with potassium and ammonium iodides, published in Journal, Indian Chemical Society, 30, 543-544, 1953 (August).
- Dr. S. C. Sen Gupta and D. N. Chatterjee, Studies in catalytic dehydrogenation, part I, published in Journal, Indian Chemical Society, 1952, 29, 438-442.
- Dr. S. C. Sen Gupta and D. N. Chatterjee, Studies in catalytic dehydrogenation, part II, published in Journal, Indian Chemical Society, 1953, 30, 27-29.
- Dr. S. C. Sen Gupta and D. N. Chatterjee, Studies in catalytic dehydrogenation, part III, published in Journal, Indian Chemical Society, 1954, 31, 11-16.
- Dr. S. C. Sen Gupta and D. N. Chatterjee, Studies in catalytic dehydrogenation, part IV, published in Journal, Indian Chemical Society, 1954, 31, 285-290.
- Dr. S. C. Sen Gupta and D. N. Chatterjee, Studies in catalytic dehydrogenation of alkylated spiro-hydro carbons, published in Science and Culture, 1953, 18, 494.

- Dr. S. C. Sen Gupta and D. N. Chatterjee, Catalytic dehydrogenation of catylated spiro-hydrocarbons, published in Science and Culture, 1953, 19, 47-48.
- Dr. S. C. Sen Gupta and A. Bhattacharjee, Synthesis of poly-nuclear hydrocarbons with fusid cyclopentane-ring, Part II, published in Journal, Indian Chemical Society, 1953, 30, 805-808.
- P. Das Gupta and K. P. Basu, D.Sc., Ph.D., F.N.I., Metabolism of Adrenatine and related compounds in different tissues of the body, published in Indian Journal of Medical Research, July, 1954.
- P. Das Gupta and K. P. Basu, D.Sc., Ph.D., F.N.I. Metabolism of amino-acids in heart and lung tissues, published in Indian Journal of Medical Research, July, 1954.
- P. Das Gupta, Oxalene-diamidoxine, Part III, Estimation of palladium, published in Journal, Indian Chemical Society, Vol. 30, No. 11, 1953.
- P. Das Gupta, Oxalene-diamidoxine, Part IV, Structure of palladium complex, published in Journal, Indian Chemical Society, July, 1954.
- P. C. Rakshit, The partition co-efficient of associated soluts, published in J.Sc. Congress, 1953.
- Ajoy Kumar Choudhury, Study of the phase-diagrams of salol and Benzo-phenone, published in J.I.C.S., 1952, 29, 196.

English

D. Phil

- Bhabatosh Chatterjee, The Poetry of W. B. Yeats.
- Miss Gayatri Guha Ray, The Marxist Theory of Literature.
- Dr. S. C. Sen Gupta, Head of the Department, has been engaged on a study of the fundamental problems of aesthetics and the results of his investigations are expected to be published in 1955.

Geology

Ajit Kumar Saha,

- (1) Structural and Petrological studies on the diorites and associated rocks in Eastern Singhbhum and Mayurbhanj, begun in October, 1952.
- (2) Relationship between shape and size of plagioclase crystals in basic igneous rocks, begun in April, 1952.
- (3) (Jointly with Professor S. Roy) Statistical study of trends of dolerite dykes in Singhbhum granite, begun in June, 1952.

Ajit Kumar Banerji, Asstt. Professor,

- (1) Metamorphism of basic igneous rocks, begun in January, 1952.
- (2) Mineralisation, Metamorphism and magnetism orgeny in N. E. Singhbhum, Bihar, begun in October, 1952.

Dinabandhu Lahiri, Junior Demonstrator, Coal cleaning, begun in February, 1954. (Still in progress).

Professor S. Ray (Jointly with A. K. Saha), Statistical Study of trends of dolerite dykes in Singhbhum granite begun in 1952.

M. Sc.

Under the guidance of Prof. S. Ray :—

- Kshitindramohan Naha, Petrology of the Metamorphic and Intrusive rocks of Eastern Mayurbhanj, begun in 1952.
 Subhundu K. Bakshi, Petrology of Rajmahal lavas around Dharampur (Chuperbhita pass) S. P., begun in 1952.
 Benoy N. Neogi, Granite gneiss of Abhayapuri, Assam, begun in 1952.
 Pranab Banerjee, Petrology of Archaean rocks around Satbarwa, Daltonganj, Bihar, begun in 1953.
 Supriya Sen Gupta, Petrology of para-lavas from Jharia coal fields, begun in 1953.
 Prasenjit Saha, Petrology of Archaean rocks around Khatra, Bankura District, Bengal, begun in 1953.
 Niranjandeb Chatterji, Petrology of Archaean rocks around Muri and Silli, Ranchi District, Bihar, begun in 1953.
 Kshitindramohan Naha, Chloritoid around Sirsa, N. E. Mayurbhanj, begun in 1954 (in progress).

Physics

- Dr. Kar & Sanatani, Classical Interpretation of Dirac's theory.
 Dr. Kar & H. Mukherjee, Classical derivation of Pseudoscalar interaction potential.
 Dr. Kar & S. K. Kundu, On a new theory of alpha decay.
 Dr. R. L. Sen Gupta & K. K. Roy, Production of penetrating showers in Paraffin & lead.
 Dr. R. L. Sen Gupta, K. K. Roy & M. M. Biswas, Nebelkammer, Untersuchungen der Erzeugung durchdringender schaluer in Alminium and Beli.
 Dr. S. B. Sanyal, On Raman spectra & fluorecence of ortho & parachlorotoluem in the liquid and solid states.
 R. Chakravarty & S. B. Roy, on the production of charged Mison Paris by neutral particles in cosmic rays.
 S. P. Banerjee & Sm. Amita Mitra, On Bita emission and energy levels of the product nuclear.
 M. M. Biswas, Cloud chamber study of Rossi Second Maxima under Lead.
 N. K. Dutt, Investigation on the bowed string with an electrically driven bow.
 Dr. K. C. Kar, A treatise on Statistical Mechanics.

Zoology

List of Publications During 1952 to '54

- Mookerjee, Sivatosh
 1953, The role of the lateral plate mesoderm in amphibian embryos, published in J. Exp. Zool. **124**, 505-512.
 1953, Experimental dissociation of cells from chick embryos, published in *Nature*, **171**, 796-767.
 1953, Thermal exposures of ectoderm cells isolated from amphibian gastrulae, published in *Experientia*, **9**, 340-342.

- 1953, Physiological dynamics of cells isolated from chick embryos published in *Pro. Nat. Ins. Sci. India*. **19** : 641-645.
- 1953, Inductivity and plasticity of the Ventral blastoporal lip cells, published in *Proc. Nat. Ins. Sci. India*. **19** : 648-651.
- 1953, An experimental study of the development of the notochordal sheath, published in *J. Embryol. exp. morph.* **1** : 411-416.
- Mookerjee, Sivatosh, Deucher Elizabeth & Waddington 1953, The morphogenesis of the notochord in amphibian, published in *J. Embryol. exp. Morph.* **1** 399-409.
- Mookerjee, Sivatosh and Bose Asoka 1953, Effects of temperature fasting on the structural organisation of chick embryos, published in *Roux' Archiv fur Entwicklungmechanik*, **146**, 537-543.

Rishi Bankimchandra College, Naihati, 24 Parganas

Biology

D. Phil

Haridas Gupta, The pectoral and the pelvic girdle of teleostean fishes.

Sripat Singh College, Jiaganj, Murshidabad

Chemistry

Jagadananda Dutta, Reactions with dry Alkaline Earth Hydroxides, begun in 1949.

St. Joseph's College, Calcutta

D. Sc.

Professor J. M. Ganguli, Relativity and allied subjects—like Time, Space, Gravitation and Casuality.

Sukendranath College, Calcutta

Dr. Ram Chandra Pal, D.Phil.,

- (a) The Logical Structure of Reality.
- (b) Studies in Philosophy of Krishna Chandra Bhattacharyya.
- (c) Studies in the Fundamental Induction.

Professor Asit Kumar Banerjee, A critical study of the 19th Century Bengali Literature.

Professor Sudhanshu Kr. Mukherjee, Soil Microbiology.

Prof. Santosh Kumar Sarkar, 'Cyto-Chemistry' and 'Cyto-genetics'.

Dr. P. S. Mookerjee, Zoology, Ichthyology and Fisheries.

Prof. Ajit Kumar Ghosh Barman, 'Banga Sahitya Hasyaras'.

Prof. Jagadananda Ghatak, Cytoembryological investigations on some members of the family Bignoniaceae.

Dr. Sudhanshu Kumar Sen Gupta, Vedic literature with the object of placing on a firm chronological basis the different strata of the remains of a vast ancient literature.

Prof. Praphulla Kumar Guha, Character and Fate in Tragedy.

University College of Science

Anthropology

1952-53

- K. P. Chattopadhyay, Korku Physical Type and Racial Affinities, published in the Journal of the Asiatic Society, Science, Vol. XVIII, No. 1.
- K. P. Chattopadhyay, A Socio-Economic Survey of Jute Labour, published by Calcutta University.
- K. P. Chattopadhyay, Tribal Education, published in *Man in India*, January, 1953.
- M. N. Basu, A Study of Museology, published in Museum Journal of India.
- M. N. Basu, Anthropologist's Laboratory is the field, published in *Man in India*, March, 1953.
- K. P. Chattopadhyay, The Lost Wax process of Casting Metals in Mayurbhanj, published in *Man in India*, Vol. 32, No. 4.

Applied Mathematics

Researches on the following topics were carried out by the members of the staff :

- Prof. N. R. Sen had been working in the Theory of Relativity and was engaged in the investigation of the propagation of discontinuity in the gravitational field.
- Dr. S. C. Kar was working on Quantum Dynamics of Electrons.
- U. R. Burman has been working on the internal constitution of stars.
- P. K. Ghosh has been engaged in the examination of rigour in problems of Mathematical Physics.

Botany

Prof. P. C. Sarbadhikar. Alteration in chromosome complex as a means of Evolution published in Symposium on Organic Evolution, March, 1953.

Dr. I. Banerjee :

- (1) A contribution to the embryology of *Synedrella nodiflora* Gaertn. and *Vernonia cinerea* Lees (1953) published in Ind. Sc. Congr. Lucknow.
- (2) A note on the Intraxylary phloem of *Dregea volubilis* Benth, published in Science & Culture, 1953.

Dr. S. M. Sarkar :

- (1) Final report for researches on vernalization and photoperiodism of rice, published in I.C.A.R. publication, November, 1952.
- (2) Studies in the physiology of rice. VI Effect of photoperiods on the development of stem apex, published in Botanical Gazette, June, 1953.

A. K. Sharma & Dipti Bhattacharyya, Permanent mounts of chromosomes after 8-oxyquinoline and squashing, published in Stain Tech. U.S.A., 1952.

A. K. Sharma, Desoxyribonucleic acid—the problem of its function, location and reactions, published in Port. Biol. 3 (Portugal)

Geography

- Dr. S. P. Chatterjee carried out land utilization survey in parts of West Bengal and brought out land use maps of the areas surveyed. These maps have been highly appreciated by Prof. S. Van Valkenburg, Chairman of World Land Use Survey.
- Dr. S. P. Chatterjee's scheme for the preparation of a National Atlas of India has the approval of the Prime Minister of India and preliminary work in this connection have been undertaken by the department of Geography.

Research work carried out by other Members of the Staff :

Sujanbandhab Chatterjee is carrying on researches in Climatology of India. Nirmalkumar Bose is carrying on researches in Human Geography of India. Kanangopal Bagchi is carrying on geomorphological studies of India. Ranajit Lahiri has carried out research on soils of Bengal and left for England to carry out further research on soils.

Geology

Prof. N. N. Chatterjee,

- (1) On Geochemical prospecting for minerals, published in Ind. Min. Jour. Vol. I, No. 1, January, 1953.
- (2) On the conservation of Metallurgical coal, published in Ind. Min. Jour. Vol. I, No. 2, February, 1953.
- (3) Utilization of low grade coals, published in Bul. Nat. Inst. Sci. Ind. No. 2, 1953.

Dr. S. N. Sen,

- (1) Origin of Alkaline Rocks of Kishengarh, published in Cur. Sci. September, 1952.
- (2) Dolerite Dyke near Sihulibari, N. Manbhum, published in Cur. Sci., October, 1952.
- (3) Structural features of porphyritic Granites and associated Metamorphites, E. Manubhum, Bihar, published in Proc. Ind. Sci. Congr. 40th session, Abst. Vol. III. 1953.
- (4) Metamorphism of Kondalitic rocks and origin of associated graphite, E. Manbhum, Bihar, published in Sci. & Culture, January, 1953.
- (5) Origin of Charnockitic assemblages, E. Manbhum, Bihar, published in American Journal, Sci. Vol. 251, May, 1953.

S. K. Rayachudhuri, On calc-magnesian metamorphites of Bagraybari-Pahargora, Manbhum (with S. Sen), published in Quart. Journal Geol. Min. Met. Soc. Ind. Silver Jubilee Volume, Vol. XXIV, 1952.

Sudhansu Aditya (Scholar) C.S.I.R. Scheme, Study of an occurrence of Albite Epidote rock from near Shusina, Manbhum District, published in Ind. Sc. Congress, Lucknow, 1953.

Aniruddha De (India Govt. Research Scholar) :

- (1) Zonal metamorphism in the Balason Valley, Darjeeling Himalayas, published in Ind. Sc. Congr. Lucknow, 1953.
- (2) Petrology and Metamorphic facies of the basic rock from the

Balason Valley, Darjeeling Himalayas, published in Ind. Sc. Congr. Lucknow, 1953.

Sisir Kumar Sen (University Research Scholar), on the Geology of the area around Balarampur, Manbhum District, published in Ind. Sc. Congr. Lucknow, 1953.

Physiology

Ajitkumar Maiti & J. N. Mukherji, Haematological studies of alloxan diabetic rats, published in Indian Journal of Physiology and Allied Sciences, Vol. VI, No. 4, 1952.

J. N. Mukherji & P. B. Sen, Studies on the action of Rauwolscine hydrochloride, an alkaloid of *Rauwolfia canescens* on the amphibian and mammalian heart muscle, published in Indian, Journal of Physiology and Allied Sciences, Vol. VII, No. 1, 1953.

J. N. Mukherji, Studies on the pharmacology of Rauwolscine, the alkaloid of *Rauwolfia canescens*, published in Science and Culture, Vol. 18, 1953.

P. B. Sen, J. N. Mukherji & Ajit Maiti, Investigation on the mechanism of action of adrenaline on coagulation of blood, published in Indian Journal of Physiology and Allied Sciences, Vol. VII, No. 2, 1953.

J. N. Mukherji & P. B. Sen, Effect of Rauwolscine hydrochloride on the blood pressure of normal cat, published in Indian Journal of Physiology and Allied Science, Vol. VII, No. 4, 1953.

Gangagovinda Bhattacharya, Protection against alloxan diabetes by mannose and fructose, published in Science, Vol. 117, 1953.

Psychology

The study of criminology in both its theoretical and practical aspects and new experiments on illusion of movements have been two notable features in the work of the department. Job analysis of several vocations have been completed.

The Applied Section has published the Bengali adaptation of the Wechsler-Bellevue Intelligence Tests, Forms A & B. Private parties, industrial concerns and various State Organisations have drawn upon the services of the Section for vocational guidance and selection. Suitable battery of tests have been prepared and administered for recruitment to the National Carbon Company, Ichapore Rifle Factory, Chittaranjan Loco Workshops, etc. Preliminary investigations are under progress for personnel selection at the invitation of the Director General of Ordnance Factories and the Indian Life Assurance Officer Association.

Study of accident-prone persons is being continued at the Metal Box Co. of India. A portable Dotting Apparatus has been designed and constructed for objective measurement of subjects' performance. Further progress has been made in the study of employer-employee relation in industries under the Government of India Tension Study Scheme.

Pure Physics

M. N. Datta, Structure of Tetraphenyl Ethylene published in Ind. Journal Physics, Vol. XXVII, 1953.

- M. N. Datta, An X-ray investigation of the Tetraphenylethylene Crystal, published in Ind. Journal Physics Vol. XXVII, 1953.
- M. N. Datta, Diffuse Spots of Pyrene at higher Temperature, published in J. Chem. Physics (U.S.A.) March, 1953.
- M. N. Datta, Extra-Lane Reflection of Tetraphenyl ethylene, published J. Chem. Phys.
- M. N. Datta, Structure of meta-amino-phenol, published in Nature.
- R. L. Brahmachari, Sur la possibilite d'un nouveau modele statique de cosmologie, published in Naturwiss. 40, 53, 1953.
- R. L. Brahmachari, Sur la possibilite d'un nouveau modele statique de cosmologie II—, published in Naturwiss. 40, 313, 1953.
- R. L. Brahmachari, Sur les proprietes d'un models instabel de cosmologie contenant un fluide imparfaite, published in Naturwiss.

Statistics

Researches on the following topics were carried out by the members of the staff.

- (1) Construction of statistical tables.
- (2) Psychometric analysis.
- (3) Design of Experiments.
- (4) Systematic sampling, Topographic variation and sample surveys.
- (5) Non-parametric tests.
- (6) Population statistics.

Zoology

- Professor H. K. Mookerjee—On the structure of the vertebral column and Weberian ossicles in the carp minow, *Esomus danerius* (Ham) in collaboration with Dr. D. N. Ganguli and P. S. Mookerjee, published in Proc. Zool. Soc. Beng., September, 1952.
- Dr. J. L. Bhaduri—Parallel Tests with Calcutta and Hebbal (Bangalore) toads for bovine pregnancy, published in Cur. Sci. 22, January, 1953, in collaboration with N. R. Bardhan.
- Dr. J. L. Bhaduri—A Study of Urinogenital System of Salientia, published in Proc. Zool. Soc. Beng., 6 (1), March, 1953.
- Dr. S. P. Raychoudhuri—Frequency of Dcentric Bridges in Meiosis in the Grasshopper produced by different dosages of X-rays, published in Science, 116, October, 1952.
- Dr. S. P. Raychoudhuri.—A New Type of Segregation of the Sex Chromosomes in the Cotton Stainer, *Dysducus Koenigii*, published in Journal Genetics, Vol. 51, July, 1952.
- Dr. S. P. Rayachoudhuri, Electron microscopic study of grasshopper chromosomes, published in Nature, August, 1952.

College of Technology

Applied Physics

Researches were carried out on the following topics by the members of the staff :

- (1) Electrical Properties of Indian Mica.
- (2) Physical Properties of Indian Vegetable Oils.

- (3) The Design of a mercury motor type D.C. Supply Meter.
- (4) Spectra of heavy halide molecules.
- (5) Distribution and concentration of stresses in engineering materials.
- (6) Performance characteristics of some electrical machines.

Applied Chemistry

Researches were carried out on the following topics.

- (1) Alcoholysis of Fats.
- (2) Study and Synthesis of High Octane Liquid Fuels.
- (3) Determination of Particle size in subsieve range.
- (4) Studies on Synthetic Glycerides.
- (5) Studies on Oxidation of Fats.
- (6) The component fatty acids of *Swietenia Macrophylla* seed fat.
- (7) The Composition of *Cucurbitacea* seed fats.
- (8) The Composition of Tung Oils from Tea Garden areas in North Bengal.
- (9) Work is on progress on the composition of Indian Tobacco seed oils, soyabean oils and other seed fats as also on Bentonites.
- (10) Studies on the aetiology of pre-eclamptic toxemia and eclampsia.
- (11) Microbial Production of Vitamin B12 (anti-anaemic factor).
- (12) Lubricating power of oils on Jute.
- (13) Preparation of surface active agents from oils *via* monoglycerides.
- (14) Preparation of Rosin esters of castor oil.
- (15) Studies on the decolorisation of glass.
- (16) Studies on the utilisation of blast furnace slag cement.
- (17) Studies on the production of the phosphatic fertilisers from apatite ores and other phosphorous bearing minerals available in the Damodar Valley area.
- (18) Studies on the preparation of titanous sulphate reagent from commercial TiO_2 and application of the prepared reagent in different chemical analysis.

Radio Physics and Electronics

Researches were carried out on the following topics by the members of the staff :

- (1) Ionospheric Nuclear Resonance.
- (2) U. H. F. Transmitting Antenna,
- (3) Wide Band U. H. F. Oscillator,
- (4) Ferromagnetic Permeability,
- (5) Tropospheric Propagation of Microwaves,
- (6) Thermionic and Valves,
- (7) Network Synthesis.

University College of Science

Anthropology

D. Sen, Prehistoric Researches in India, published in *Man in India*, Vol. 33, No. 3, July-September, 1953.

Lower Palaeolithic Culture—Complex and Chronology in India, published in *Man in India*, Vol. 34, No. 2, April-June, 1954 and *Eastern Anthropologist*, Vol. VII, No. 2, 1954.

- G. S. Ray, Microlithic Industry of Bongara (Manbhum) published in *Man in India*, Vol. 34, No. 1, 1954.
- A Magico Religious Ceremony in connection with the disease of Ho boy—(A joint paper), published in *Man in India*, Vol. 34, No. 3, 1954.
- Dr. M. N. Basu,
- (1) Cleaning and Preservation of Bronze specimens,
 - (2) Study of Heredity based on Somatometric measurements and Somatoscopic observations of a functional social group of Bengal, published in Indian Science Congress Session, 1954.
- S. S. Mukherji, Juvenile Delinquency in Calcutta, published in *Man in India*, Vol. 33, No. 4, October, December, 1953.
- Professor K. P. Chattopadhyay, The Racial Composition of Bengalees, published in Census of West Bengal, 1951, Tribes & Castes of West Bengal, July, 1953.
- A note on the tree press, published in Indian Science Congress Session, 1954.
- Problems & Methods for Indian Anthropologists regarding aboriginals, published in the Presidential Address, Section of Aboriginal Education, All India Educational Conference, Calcutta, 1954.
- A short note on Indian plough types, published in International Conference of Technology, Copenhagen, May, 1954.
- Organised in collaboration with others a survey of conditions of study and residence etc. of Undergraduate students : a chapter to the Report published 'Undergraduate students in Calcutta : How they live and work'.
- T. C. Das, Social organisation of the Tribal peoples in India, published in Indian Journal of Social Work, December, 1953.
- Tribal Welfare and Rehabilitation, published in Anthropology Section, Indian Science Congress Session, 1954.
- Cultural Research Institute, published in Tribal Welfare Conference Lohardaga Session, November, 1953.
- Classification of Tribals in India according to their assimilation and the respective approaches to their problems, published in West Bengal State Conference of Social Work, December, 1953.
- Classification of tribals of India and a plan for their assimilation, published in 16th International Congress of Sociology—Paris—1954.
- A. N. Chatterji, Blood pressure of Bengalee students, published in Indian Journal of Pediatrics, November, 1953.
- T. C. Ray Choudhuri, A study of Height and Weight of Bengali School going girls, published in *Man in India*.

Botany

- I. Banerji & N. Pal, Intraxylary phloem in *Dregea volubilis*, published in Science & Culture, 18 (1953).
- I. Banerji & A. Hakim, A contribution to the life history of *Artocarpus lakoocha* Roxb, published in Proc. Indian Academy of Sciences, 3 (1954).
- Photoperiodism in rice (Symposium) published in F.A.O. Report No. 116 (1953).
- S. M. Sircar & S. P. Sen, Studies on the physiology of rice VI Effect of photoperiod on development of the shoot apex, published in Bot. Gaz. June, 1953.

- A. K. Sharma, Miss Archana Mookerjee & Miss Chitra Ghosh, The scope of alkaline phosphatase technique in plant chromosomes, published in *Portugalia Acta Biologica*, 3 : 341-354, 1953.
- A. K. Sharma and Miss Dipti Bhattacharjee, Somatic reduction in untreated Leguminous plants, published in *Genetica* 26 : 410-414, 1953.
- A. K. Sharma & A. K. Bal, The use of Coumarin in chromosome analysis, published in *Stain Tech.*, 28 : 288-257, 1953.
- A. K. Sharma & Miss Archana Mookerjee, Possibilities of the use of hormones in chromosome analysis, published in *Caryologia*, 6, 52-62, 1954.
- A. K. Sharma & N. K. Das, Study of karyotypes and their alteration in aroids, published in *Agronomia*, latest issue, 1954.
- A. K. Sharma & Miss Chitra Ghosh, Cytogenetics of some of the Indian Umbellifers, published in *Genetica*, latest issue, 1954.
- Principles and problems of microfloral correlation of Indian coal seams with special reference to Karharbari coalfield, published in *Bull. Nat. Ist. Sci. India*, No. 2, 129-140, 1953.

Chemistry Inorganic

- A. K. Chakravarty, N. N. Ghosh and P. R. Ray, A study of the complex compounds of diglycylethlayne diamine with bivalent metals, published in *Indian Chemical Soc.* XXX. P. 185, 1953.
- A. K. Chakravarty, D. Sen and P. R. Ray, Colorimetric method for estimation of uranium, published in *Journal of Indian Chem. Soc.* XXX 491, 1953.
- Dr. N. K. Dutt & Miss P. Bose, Malonato an doxalato complexes of trivalent metals Part I, published in *J. Indian Chem. Soc.* XXX, 431, 1953.
- N. K. Dutt & H. G. Mukherjee, Chemistry of Rare Earths X, published in *J. Ind. Chem. Soc.* XXX, 272, 1953.
- N. K. Dutt & N. Goswami, Chemistry of Rare-Earths XI, published in *J. Indian. Chem. Soc.* XXX, 275, 1953.
- P. B. Sarkar & N. N. Ghosh, Chemical homology and isomorphism, published in *Science & Culture*, XIX, 209, 1953.
- G. Mitra, Hydroxfluobryllate and its isomorphism with sulphate, published in *Science and Culture*, XVIII, 393, 1953.
- Monisha Bose, The reaction of chromate with diphenyl carbazide (Part I), published in *Anal. Chim. Acta*. X, 201, 1954.
- The reaction of chromate with diphenyl carbazide (Part II), published in *Anal. Chim. Acta*. X, 209, 1954.
- Monisha Bose & D. M. Chowdhury, Physicochemical studies on the complex formation between thorium ion and oxalate ion I. Distribution of constant of K_4 ($\text{Th}(\text{C}_2\text{O}_4)_4$).
- R. K. Dutt, Homology of Fluoberyllate and sulphate ions, published in *Science & Culture*, 18, 599, 1953.
- G. Mitra, Trifluoborates and difluosilicates, and their chemical analogy with the sulphates, published in *Science and Culture*, 18, 393, 1953.
- G. Mitra, Monofluo-arsenates and their chemical analogy with the sulphates, published in *Science and Culture*, 19, 216, 1954.

- R. K. Dutt, Extraction of thorium and Cerium from Monazite sands of Travancore Part I, published in J. Sc. Ind. Research-12 B-485—1953.
 R. K. Dutt & N. K. Dutt, Extraction of thorium and Cerium from Monazite sands of Travancore Part II, published in *ibid*, 12 B-488—1953.

Chemistry Organic

- Asima Chatterjee (Nee Mookerjee) Fraxinifolin, the active principle of *Evodia fraxinifolia*, Hook, published in Proc. Indian Sci. Cong. III, 319, 1953.
 Asima Chatterjee & Anima Chaudhuri, An approach to the Synthesis of Dictamnine, the alkaloid of *Dictamnus albus*, Linn. Synthesis of 4-hydroxy quinoline—2:3—pyrone, published in Proc. Indian Sci. Cong. III, 319, 1953.
 Asima Chatterjee (Nee Mookerjee) & Satyesh Pakrashi, Yobyryne — the selenium dehydrogenation product of Rauwolscine, the alkaloid of *Rauwolfia canescens*, Linn, published in Proc. Indian Sci. Cong. III, 355, 1953.
 Asima Chatterjee & A. K. Bhattacharyya, Studies on the constitution of the Active Principles isolated from the leaves and bark of *Skimmia laureola*, published in Indian Chem. Soc. 30, 33, 1953.
 Asima Chatterjee & S. Pakrashi, Yobyryne, the selenium dehydrogenation product of Rauwolscine, the alkaloid of *Rauwolfia canescens*, Linn, published in Science & Culture, 18, 443, 1953.
 Asima Chatterjee & S. Bose, The Constitution of ajmaline, published in Experientia 9, 254, 1953.
 Asima Chatterjee & Satyesh Pakrashi, on the Constitution of Rauwolscine, the Alkaloids of *Rauwolfia canescens*, Linn, published in Science & Culture, 19, 109, 1953.
 Asima Chatterjee & S. Ghosh Mazumdar, Glycosin, the New Alkaloid of *Glycosmis pentaphylla*, Correa, published in Science & Culture, 1953, 18, 505.
 Asima Chatterjee & S. Ghosh Mazumdar, Glycosin, the New Alkaloid of *Glycosmis pentaphylla*, Correa, published in Science & Culture, 1953, 18, 604.
 Asima Chatterjee & S. Ghosh Mazumdar, Constitution and Synthesis of Glycosine, the New Alkaloid of *Glycosmis pentaphylla*, Retz. D.C., published in J. Amer. Chem. Soc. 1953, 75, 4365.
 Asima Chatterjee & S. Pakrashi, The Stereochemistry of Rauwolscine, the Alkaloid of *Rauwolfia Canescens*, Linn, published in Proc. Indian Sci. Cong. Part III, 74, 1954.
 Asima Chatterjee & Subhendu Ghosh Mazumdar, Synthesis of 1-methyl-2:4 quinazolone, published in Proc. 41st Ind. Sci. Cong., 1954, Part III, 63.
 Asima Chatterjee & Subhendu Ghosh Mazumdar, Periodic Acid Oxidation of Unsaturated Compounds, published in Proc. 41st Ind. Sci. Cong., 1954, Part III, 63.
 Asima Chatterjee & Satyesh Pakrashi, The Alkaloids of *Rauwolfia Canescens*, Linn, Part VI, Yobyryne—The Selenium Dehydrogenation Product of Rauwolscine, published J. Ind. Chem. Soc. 31, 25, 1954.
 Asima Chatterjee & S. Pakrashi, The Alkaloids of *Rauwolfia Canescens*, Linn. Part VII, Studies of the Infra-Red spectra of Rauwolscine and its acetyl derivative, published in J. Ind. Chem. Soc. 31, 29, 1954.

- Asima Chatterjee & S. Pakrashi, The Alkaloids of *Rauwolfia canescens*, Linn. Part VIII. Selenium Dioxide Oxidation of Yobyrine—The selenium Dehydrogenation Products of Rauwolscine, published in J. Ind. Chem. Soc. 31m, 1954.
- S. Bose, Rauwolfinine : A New alkaloid of *Rauwolfia serpentina*, Benth Part I, published in J. Indian Chem. Soc. 31, 47, 1954.
- Asima Chatterjee & S. Bose, The Constitution of Ajhaline, Part I, published in J. Ind. Chem. Soc. 31, 17, 1954.
- Asima Chatterjee & Satyesh Pakrashi, On the Stereochemistry of Rauwolscine : the Alkaloid of *Rauwolfia canescens* Linn, published in Die Naturwissenschaften, 41, 215, 1954.
- Asima Chatterjee, Satyesh Pakrashi & Ajay K. Bose, Conformation of Rauwolscine Alloydohimbine and their congeners, published in Chemistry and Industry (London), 491, 1954.
- S. Bose, Rauwolfinine, A New Alkaloid of *Rauwolfia Serpentina* Benth, Part II, Studies on the Ultraviolet and Infra-Red Absorption Spectra, published in J. Indian Chem. Soc. 31, 311, 1954.
- Asima Chatterjee & S. Bose, Isolation of Serpine, A New Isomeride of Yohimbine from the Root of *Rauwolfia Serpentina* Benth, published in Science & Culture, 19, 512, 1954.
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Anima Devi :

1. The specificities of the enzymes involved in the hydrolysis of choline and non-choline esters; the influence of various physical factors on the rate of hydrolysis of acetyl choline by cobra venom acetyl-cholinesterase have been investigated.

2. The action of snake venom on muscle contraction and excitability has been extensively studied. (Their action on muscle tissues, previously treated with Kcl solution have been investigated in order to understand the mechanism of their action on muscle tissues, i.e., how they bring about muscular contraction.

3. Action of Russell's Viper venom heated to different temperatures on blood pressure and respiration of anaesthetised cat have been studied. (Russell's Viper venom heated 95° C for half an hour when introduced through the femoral vein, a fall of blood pressure to a lower level is observed without affecting the respiration. From our finding it appears that there might be a possibility of its use in the treatment of hypertension cases.)

4. Effect of heat on the various properties of Cobra Venom such as neurotoxic, Cardiotoxic, haemolytic have been investigated. Effect of heat on the stability of Choline Esterase, inhibitors of cytochrome oxides have been also studied. (All these experiments were undertaken in order to know which one the toxic principles of cobra venom is mainly responsible for causing death. From our results it seems that the respiratory toxin is primarily responsible for total toxicity of the venom. Although there are other active principles and all of them equally toxic when applied individually yet all of them seem to contribute not more than 10% of the total toxicity.)

5. Action of monovalent and divalent actions on muscle contraction and excitability has been studied.

(Whereas the muscle contracts in CaCl_2 solution, it remains in the relaxed state in Kcl solution. The muscle goes to pronounced contracture almost instantaneously when Kcl solution is added to the muscle. In this respect no other action can behave in the same manner. The results of the observation indicate that the action of the ions is purely surface phenomenon.)

CEYLON

1952

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- Problems of Land use in Highland Villages of Ceylon (in preparation).

G. Thambyahpillay :

- Revised Chapters on Geography and Climate, contributed for the Ceylon Year book 1950, Maps later used in World Bank Report.
- Climates of Ceylon (M.A. Thesis, 1952)
- Climatic Controls in Ceylon, published in Ceylon University Review, October, 1953.

Ceylon and the World Climatic Mosaic, published in Ceylon University Review, January, 1954.

Thunderstorm Phenomena in Ceylon, published in Ceylon University Review, July, 1954.

The Rainfall Rhythm in Ceylon, published in Ceylon University Review, October, 1954.

History

S. Arasaratnam is at present working on a thesis on the Dutch period of Ceylon history.

S. Mahendran is expected to complete his thesis on Anglo-French relations in the Carnatic in the course of the next session.

W. J. F. LaBrooy is also working on a volume of Ceylon Documents from 1833. The work is also expected to be completed during the next session.

Miss S. Wicramasinghe has contributed an article in the Parakramabahu number of the Ceylon Historical Journal and is also working on the Kalinga period of Ceylon History.

Kodikara is working on the educational developments in the British period of Ceylon.

Dr. T. Vimalananda is publishing a work in Sinhalese on the development of Sinhalese script, which is being published by M/s. M. D. Gunasena. This work is expected to be published before the end of June next.

Law

B. C. Ahlip :

Principles of Liability in Tort, published in Law Students Review, 1954.

The Aquilian Action, published in the University of Ceylon Review, November, 1954.

Philosophy

Dr. A. K. Sarkar, The changing phases of Buddhist Thought, a paper read in one of the Seminars of the Indian Philosophical Conference.

K. N. Jayatilleke, Meaning and Verification, an article to be published in the University of Ceylon Review.

Sociology

A paper on the study of kinship systems has been completed and will be published (in Sinhalese) in the University Review.

FACULTY OF SCIENCE

Botany

B. L. T. de Silva :

Ontogenetic Studies of the Shoot apex of *Cycas*, published in the Proceedings of the C.A.A.S., 1954.

Reproductive apex in *Cycas*, published in the Proceedings of the C.A.A.S., 1954.

- B. A. Abeywickrema, Glossary of Scientific and Technical Terms in Sinhalese, published by the Ministry of Education.
- Dr. Abeywickrema, served in the Committee which was responsible for the Compilation of the glossary.

Chemistry

- Professor E. L. Fonseka, Practical Chemistry, (12th Edition) with the Organic Section completely rewritten, published by The Colombo Apothecaries Co. Ltd.
- Dr. W. L. W. Ludekens, A simple thermal fuse for the protection of electrical furnaces, published in Laboratory Practice, 1954, 3 (10), 418.
- Dr. W. L. W. Ludekens and T. Thirunamachandran, The stability of sodium carbonate monohydrate, published in Chemistry and Industry, 1954, 1266.
- Dr. W. L. W. Ludekens and P. W. Vitanage, Some high temperature X-ray and optical studies on Ceylon Metamict Zircon, published in Proceedings of the Ceylon Association for the Advancement of Science, (Abs.) 1954, 37.
- Dr. W. L. W. Ludekens, An X-ray study of the zinc oxide titanium dioxide reaction in the solid state, published in Pro. C.A.A.S., 1954, 37.
- Dr. M. A. V. Devanathan, A theory of the electric double layer and the interpretation of differential capacity curves, published in Trans. Farad. Soc. 1954, 50, 373.
- Dr. M. A. V. Devanathan and P. Peries, The absorption of potassium halides at the mercury water interface, published in Trans. Farad. Soc. 1954, 50, 1236.
- Dr. C. Q. C. Fernando and R. W. Keown, The reactions of anils with 8-Quinolinol, published in J. Org-Chem. 1954 19(6), 907.
- Dr. C. Q. C. Fernando and M. de Silva, Paper chromatography of cations with azo derivatives of 8-Hydroxyquinoline and some derivatives with potassium bromate, published in Analyst, 1954, 79, 713.

EDUCATION

Language Studies

(a) *Sinhalese*

Miss S. Wickremasuriya's study of vocabulary development is being conducted along two lines :—

- (i) By electronic tape recording of children's speech in free play situations. This work involves a considerable amount of travelling, the transport of the recording machine, convertor and car battery and the lengthy task of transcribing and analysing the records.
- (ii) By analysis of the vocabulary load (word content) of representative primers (first language books) used in the first school year. The wide variations between such books indicated clearly the need for objective studies of the type being undertaken.

(b) *Tamil*

Dr. Thani Nayagam is continuing his study of the development of the vocabulary among Tamil children and has initiated a parallel study of reading interests.

Arulanandhy is adapting and translating into Tamil the pupils readers and teacher's hand book originally written in Sinhalese by Mrs. D. Wickremasinghe and Miss S. Wickremasuriya.

(c) *English*

Jayasuriya has collaborated in a teachers' book on method.

In connection with language studies the following points may be noted :

- i. Investigations in the field are time consuming and exacting so that progress is inevitably slow. What has been achieved however is a justification for Council's expenditure on recording apparatus, travel costs, Sinhalese and Tamil typewriters and the provision of typing and coding services. Without such facilities the work could not be undertaken.
- ii. Seminars and tutorial discussions are held in the Department in Swabhasha and special attention is given to teaching in the mother tongues. As far as possible all students doing Teaching Practice are expected to teach some subjects in Swabhasha.
- iii. Members of the staff have given a considerable amount of attention to the language problem in general and have contributed a number of articles in this field.

Other Research Work in Progress

Measurement of Intelligence

- J. E. Jayasuriya, Standardisation of a verbal Sinhalese test and directing the construction of a non-verbal intelligence test by an M.A. candidate.
- T. L. Green, Continuation of a year-to-year study of the general ability of graduates entering the Department by the use of two well known tests (Raven's Matrices and California M.M.J., Ad. S. 47).

Special Abilities

- T. L. Green, Cross cultural study of performance on two tests of boys in England and Ceylon. This is a continuing investigation started in 1953 which aims at estimating the effect of culture pattern on abilities for special perception. Interim results were published and reported last year.

Sociology of the Teaching Profession.

- T. L. Green, A continuing study is in progress on the factors affecting entry to the teaching profession in Ceylon. Papers on the results were reported in previous years and others are in preparation.

Age and University Entrance.

Arulanandhy is making a study of the age distribution of candidates for admission to the University which will also involve a study of success in relation to frequency of attempt and the availability of educational opportunity.

Sixth Forms in Schools in Ceylon.

- K. Nesiiah has made a study of the characteristics of University Entrance forms in Ceylon Schools which reveals some important points about organisation and staffing in relation to examination results.

Cumulative Records.

K. S. Arulnandhy, in collaboration with a group of The Ceylon National Education Society, work is still unpublished, due to lack of funds.

Rural Education.

The survey conducted by the Professor of Education, reported last year, continues and certain results have been published in papers devoted to rural education and evaluation.

Social Relationships.

The joint study by Miss C. Wickremasuriya and the Professor of Education was read as the Presidential Address to Section F of the Ceylon Association for the Advancement of Science.

The major results of other studies in this field have not yet been published but a preliminary review has appeared.

The Progress of Research :

The need for research on Ceylon's educational problems is well known and it was emphasized in Sessional Paper No. 1 of 1954. (Report of Committee appointed by Government on the National Languages as Media of Instruction in Standard VI) in the following words.

“ there is a need for research and experimentation to be carried out. . . we have a right to expect the University to take the lead in this matter.”

The research contributions from this Department are recorded in this Report and those of the previous five years.

Publications

T. L. Green :

Ceylon, case study for the Evaluation of Education and Social Progress, published in Year Book of Education, London, 1954.

Studies of Inter-group relations in Ceylon, published in Journal of Education and Psychology, Bikanar, India, 1954.

Biology in the Secondary Modern School, published by Allman, London, 1954.

Visual Approach to Teaching, published by Oxford University Press, India. (in the Press).

K. Nesiah :

Social Studies in the School, published by Oxford University Press, Teaching in India series.

Education and Citizenship, published in Colombo Hindu College Magazine, 1954.

The Social Philosophy of Mahatma Gandhi, published in Jaffna Hindu Ladies College Souvenir, 1954.

The Year 1954 in Indian Education, published in The Antonian Centenary Number.

Reform of Secondary Education in India, published in Journal of the National Education Society of Ceylon, May, 1954.

Education Under the Moghuls, published in Az-Zahira, 1954.

Towards a Language Settlement, published in Ceylon Teacher, December, 1954.

The Provision of University Entrance Forms in Schools, to be published in the Journal of the National Education Society of Ceylon.

J. E. Jayasuriya :

The English Speech Lesson — in collaboration with D. Walatara. Arithmetic for Standards 6-8, Algebra for Standards 6-8.

Geometry for Standards 6-8 (in Sinhalese), published by Macmillan.

Arithmetic for Standards 6-8 (in English) — published by Macmillan.

The Integration of the School Curriculum in Mathematics, published in Mathematical Gazette, London Vol. XXXVIII, No. 324, May, 1954.

The place of English and the National Languages in Ceylon Schools, published in Journal of the National Education Society of Ceylon Vol. III, November, 1954.

Dr. X. S. Thani Nayagam :

Tamil Manuscripts in European Libraries, published in Tamil Culture, Vol. III, November, 3 and 4.

Tamil Cultural influences in the Far East, published in Tamil Culture, Vol. IV No. 2.

Miss S. Wickremasuriya, Prithi Poth, Kindergarten Readers, Work Book and Teachers' Manual.

Physics

Dr. V. Appapillai, Professor A. W. Mailvaganam and Dr. A. W. Wolferdale, A cloud chamber study of the interactions of fast μ mesons, published in Philosophical Magazine (London), Vol. 45, P. 1059, 1954.

S. P. Baliga and Dr. T. Thambiappillai, On setting up a Cosmic Ray intensity recorder at Colombo, published in Proceedings Ceylon Association Advancement of Science, December, 1954.

Dr. G. A. Dissanaikie and Dr. A. P. French, Alpha Particles from the bombardment of Boron—11 by Proton, published in Proceedings of Ceylon Association for the Advancement of Science, December, 1954.

Dr. K. B. Mather, Measurement of the Cosmic Ray Neutron rate in the Himalayas and Australian Alps, published in Australian Journal of Physics Vol. 7, p. 601, 1954. (Dr. Mather was on the staff of the Physics Department when the Himalayan observations were taken).

Mrs. P. Amirthanandan, Meson Spectrum of Cosmic Ray at Sea-Level.

S. P. Baliga and Dr. T. Thambiappillai, On the solar daily variation of Cosmic Ray intensity in Ceylon for the period February 1954—January, 1955.

The results of this investigation have already been sent to Manchester University for comparison with observations taken over the same period and with a similar set up.

Zoology

- Dr. H. Crusz, The contribution of Religion to the Scientific Revolution, published in Az-Zahira, 1954.
- Dr. H. Crusz and Dr. V. S. V. Fernand, The trematode parasites of the dugong, with descriptions of two monostomes and histopathological changes in the host, published in Journal of Parasitology, Vol. 40.
- Dr. A. C. J. Weerakoon, The Origin, Growth and Consequences of a Myth, Presidential Address, to Section D. of Proceedings of the 10th Annual Sessions of Ceylon Association for the Advancement of Science, 1954 (in press).
- Professor W. Fernando, Morphological studies on Insects of Ceylon, in progress.
- P. Kirtisinghe, Parasitic Copepods of Fish from Ceylon IV, published in Parasitology, Cambridge (in press).
- Dr. H. Crusz :
- Trematodes, from *Scoliodon*.
- Cephaline Gregarines of common Insects of Ceylon.

Mathematics

- P. Kanagasabapathy has one further work on the minimum of the product of two linear forms, one homogeneous and the other non-homogeneous. The values of the upper and lower constants have now been determined to further places of decimals being in the two values closer together.
- Dr. P. Gibbs contributed a paper on Superconductivity to the proceedings of the Association for the Advancement of Science.
- Professor Eliezer and Amarasekera have continued some research studies in quantum mechanics.
- Amarasekera has obtained some interesting results on the motion of a particle in a dipole field.

FACULTY OF MEDICINE

Anatomy

- Professor P. K. Chanmugam with Dr. F. L. W. Jayawardene, Report on the skeletal remains at Tiruketisvaram, published in Ceylon Journal of Science, Section G. Anthropology, Vol. V, Part, II June, 1954.
- Professor P. K. Chanmugam with Dr. F. L. W. Jayawardene and Dr. Mrs. J. N. Arumugam, Note of heights and weights in male school children for ages 5-11 years, in progress.
- Professor P. K. Chanmugam with Dr. F. L. W. Jayawardene and Dr. Mrs. J. N. Arumugam, Age Menarche, in progress.
- Professor P. K. Chanmugam with Dr. F. L. W. Jayawardene, Somatotyping of Ceylonese, in progress.
- Dr. F. L. W. Jayawardene :
- Pedomorphic gerentomorphic and Simian features in certain human racial groups, Part II, a thesis for Ph.D.
- Early phases of Reptilian Development, in progress.
- Post natal changes in the vault and meninges of the human skull, in progress.

- Dr. R. Kanagasuntheram, Observation on the Anatomy of Hoolock Gibbon, Part II, published in Ceylon Journal of Science, Section G. Anthropology Vol. V. Part II.
 Developmental abnormalities of the lower urinary tract in the human, in progress.
 A Case of anomalous lesser sac in a human, infant and its probable significance on the normal development, in progress.
 Comparative Anatomy of the genitalia of the Male Hoolock and Siamang Gibbons, in progress.
 On the contrahentes muscles of the Loris Gracilis of Ceylon, in progress.
- Dr. W. Pallie, Corner, G. W. Weddel, G., Nerve terminations in the myometrium of the rabbit, published in Anatomical Rec., Vol. 118, No. 4, 789-811.
- Dr. W. Pallie and Weddel, G., The value of spreading factors in the demonstration of tissue neural elements, published in Quarterly Journal micros, Sci. 95, Part III, 389-397.
- Dr. W. Pallie and Weddel, G., The peripheral circulation in man, Ciba foundation symposium Edited by G. E. W. Wolstenholm, published by Churchill, London. (1953).
- Dr. W. Pallie, Weddel G., and Palmer, E., Nerve terminations in mammalian skin, to be published in Biological Review. (in press).

Physiology and Pharmacology

Koch, A. C. E. :

- The Vital Capacity of University Students. published in The Ceylon Journal of Science, Section D (1954), Vol. 8, 203.
 Some Observations on Physical Fitness and Training, published in The Journal of the Jaffna Clinical Society.

N. G. Baptist :

- Determination of Essential Amino Acids in some Ceylon Vegetables, published in British Journal of Nutrition (1954), Vol. 8, 205.
 Essential Amino Acids of some common Tropical Legumes and Cereals, published in British Journal of Nutrition (1954), Vol. 8, 218.

S. W. Bibile :

- The Pharmacology of the clinically used Antibacterial Agents, published in Journal of the Ceylon Obstetrics and Gynaecological Association (1954), Vol. I.
 Antibacterial Drugs, A short Review (1954), published by The Ceylon University Press, Colombo.

- S. W. Bibile, G. K. Perera, A. W. Jansz and T. Williams, The Principal Actions of Nordrenaline of Man and its uses in the Treatment of Surgical Shock, published in Ceylon Medical Journal (1954), Vol. 2, 175.
- E. Bulbring, S. R. Kottegoda and H. Shelley, Cholinesterase Activity in the Auricles of the Rabbit's Heart and their sensitivity to Eserine, published in Journal Physiology (1954), Vol. 123, 204.

K. H. Ginzel and S. Kottegoda :

Die Wirkung von Nicotin und Hexamethonium am normalen und chronisch denervierten Hertzvorhofspräparat und am Kaninchennähr., published in Arch. Exp. Path. Pharmacol. (1954), Vol. 222, 178.

The Action of 5-hydroxytryptamine and tryptamine on aortic and carotid sinus receptors in the cat, published in Journal Physiology (1954), Vol. 123, 277.

R. S. Watson :

Electrocardiography, published in Medical Students Magazine.

Colour defectives amongst Ceylonese, paper ready for publication.

S. Wijesundera and D. D. Woods, The Effect of the Presence of Methionine during Growth on the Homocysteine Methylation of Cells of E. Coli, published in Journal gen. Microbiol. (in press).

T. W. Wickramanayake, The Absence of a Time Factor in the Relationship between the Level of Energy Intake and Protein Metabolism, published in Journal of Nutrition (1954), Vol. 52, 99.

Pathology

Drs. G. E. Tennekoon and V. A. Benjamin, Neoplasms of lymphatic glands in Ceylon, in progress.

Professor G. H. Cooray and Dr. (Miss) N. Ramalingam, Skin cancer amongst the Ceylonese, in progress.

Dr. R. G. Panabokke, Experimental Fat Necrosis, in progress.

Dr. G. E. Tennekoon, Inflammation in Tendon, Sheaths and Synovial membrane (An experimental study), in progress.

Dr. (Mrs.) D. J. Attygalle, Effects of the inhalation of Plumbago Dust (Experimental study), in progress.

Professor G. H. Cooray and Dr. R. G. Panabokke, The problem of Extra Intestinal Ascaris infections in the human being and the study of the peritoneal reactions caused by ascaris ova in experimental animals, results presented at the annual meeting of the Ceylon Association for the Advancement of Science held in November. Vide abstracts, published in Proceedings of the Tenth Annual Session (C.A.A.S.), Part I, pages 3-4.

Professor G. H. Cooray, Some observations on Cancer in Ceylon, published in Acts Union International Contre Le Cancer, Vol. X, No. 1, pages 34-43.

Professor G. H. Cooray and A. S. Rajasingham, A large leiomyoma of the mediastinum, published in British Journal of Surgery, Vol. XLI, No. 168, pages 446-447 (1954).

Professor G. H. Cooray and Dr. J. B. Wedande, Ovarian Tumour with masculinizing syndrome, published in Indian Medical Gazette, Vol. LXXXIX, No. 2, pages 94-96 (1954).

Professor G. H. Cooray, Dr. R. G. Panabokke and Dr. S. V. J. Wijesekera, Some observations on Prostatic Carcinoma in Ceylon, published in Ceylon Journal of Medical Science (D), Vol. VIII, Part IV, pages 191-197 (1954).

- Professor G. H. Cooray, Dr. (Mrs.) M. Yoganathan and Dr. A. S. Dissanaikē, Enterbius Vermicularis in a suppurating cyst of the breast, published in Ceylon Journal of Medical Science (D), Vol. VIII, Part IV, pages 199-207.
- Professor G. H. Cooray and Dr. (Miss) R. Tamby, Feminizing Tumour of the ovary of mixed granulosa theca cell type, published in Journal of the Children's Hospital, Colombo, Vol. III, No. 1, pages 75-78 (1954).
- Professor G. H. Cooray and Dr. (Miss) R. Sathasivam, Bilateral adrenal neuroblastoma with neuroblastomatous replacement of sympathetic ganglia, published in Journal of the Children's Hospital, Colombo, Vol. III, No. 1, pages 10-13 (1954).
- Dr. G. E. Tennekoon, Pulmonary oedema due to Thiosemicarbazide, published in Journal of Pathology and Bacteriology (Great Britain), Vol. 67, pages 341-347 (1954).
- Dr. Mrs. D. J. Attygalle, Professor E. J. King, Dr. C. V. Harrison and Dr. G. P. Mohanty, Infective Pneumoconiosis, published in British Journal of Industrial Medicine, Vol II, pages 245-259 (1954).
- Dr. V. A. Benjamin, Tuberculoma of the Cerebellum, published in Journal of the Children's Hospital, Colombo, Vol. III, No. 1, pages 84-85 (1954).
- Dr. J. G. Wijsekera, A Study of 100 cases of myocardial infection, published in Ceylon Medical Journal, Vol. II, No. 3 (new series), pages 168-174 (1954).

Bacteriology

- Nagamuttu, Moulds on lenses of microscopes and cameras in Ceylon, has been accepted for publication in the Journal of the Royal Microscopical Society, England.

Forensic Medicine

- G. Webster and G. S. W. de Saram, Estimation of age from Bone Development : Observations on a study of 307 Ceylonese School Children of the ages 4-8 years, published in Journal of Criminal Law, Criminology and Police Science, Vol. 45, No. 2, August, 1954.

Public Health

- Immunological status of mothers and their new born infants to Diphtheria. Investigations which were commenced to find out the Immunological status of mothers and their new born infants to Diphtheria, have just been completed. The data thus gathered is being analysed. This work was carried out at the De Soysa Maternity Hospital, Colombo.
- Investigation of Birth Weights of Ceylonese Babies. An investigation into the birth weights of Ceylonese babies and their weight progress in the first ten days of life was also commenced at the same Institution. This work is being continued.
- Maternal Nutrition as a factor in Infant Mortality in Ceylon; Paper read at the 67th Anniversary Celebrations of the Ceylon Medical Association, section on Public Health. To be published in the C.M.A. Journal, Vol. 2, No. 4, 1954.

A radio talk on Childhood Tuberculosis, was given on T.B. Day over Radio Ceylon.

Medicine

P. B. Fernando and W. Wijenaiké, Rheumatoid arthritis and heart lesions, published in Indian Heart Journal, Vol. 5, September, 1953.

P. B. Fernando, Infantile Biliary Cirrhosis, published in Journal of the Lady Ridgeway Hospital for Children, 1954.

Research undertaken in 1953-54 :

-Blood Pressure differences in the 2 arms.

Some aspects of Amoebiasis, of Filariasis and leucoderma.

When the phonocardiograph is in working order, we hope to investigate the heart sounds in certain diseases. One paper is nearly ready for the press.

Paediatrics

C. C. de Silva, Lung abscess in children, published in Children's Hospital Journal, Vol. III, page 38.

Diarrhoea in Children, published in Indian Journal of Child Health, March, 1954.

Ascariasis in the Tropics, published in honour of Wallgren (Publishers, Alinquist, Wiksells and Boktryckeri, Uppsala, Sweden).

Protein Malnutrition, Presidential Address to the Ceylon Association for the Advancement of Science (in press).

E. V. Pieris :

An unusual case of Peritonitis, published in Children's Hospital Journal, Vol. III, page 79.

A case of cyst of the Lung, published in Children's Hospital Journal, Vol. III, page 81.

G. Tennekoon and C. C. de Silva, Taysach's Disease, in press.

C. C. de Silva and Mrs. Nalis Viswanathan, Mother, Your Baby, published by C. W. E., Colombo.

Surgery

Professor Milroy Paul :

The Omental Cysts, published in The Journal of the Children's Hospital, Vol. 3, No. 1, 1954.

Elephantiasis of the Scrotum and the Penis, published in The Journal of the Indian Medical Profession, Vol. 1, No. 8, November, 1954.

Professor M. V. P. Perris, Intussusception, published in The Journal of the Children's Hospital, Vol. 3, No. 1, 1954.

Dr. B. N. D. Fernando, Case of Haemangio-Endothelioma involving the facial skin, published in The Journal of the Children's Hospital, Vol. 3, No. 1, 1954.

Obstetrics and Gynaecology

Professor A. Sinnatamby :

Clinical Problems in Dysfunctional Bleeding, a paper read at the 67th Anniversary Meeting of the Ceylon Medical Association on 17th November, 1954, to be published.

Report of the Obstetrical and Gynaecological Cases, 1952, 1953 and 1954, to be published.

FACULTY OF ENGINEERING

Mechanical Engineering

J. C. V. Chinnappa :

The Solar evaporation of sea brine, research being continued.

A Study of the performance of a hot focus collector of solar energy built up of small mirrors, recently commenced.

G. D. Somasundram, The Influence of the Structure of Electricity Tariffs on National Development, a paper read at a symposium arranged jointly by the UNESCO and the National Institute of Sciences of India, in October, 1954.

FACULTY OF AGRICULTURE AND VETERINARY SCIENCE

Veterinary Science

C. A. McGaughey and C. St. George :

Bacteriological Examination of Samples of Soil and bone manure for the spores of *Bacillus Anthracis* and of variants of *B. anthracis* (Preliminary communication in press), in progress.

Survey of incidence of Salmonella in Domestic and Wild Animals in Ceylon, in progress.

C. St. George and P. L. G. de Silva, Bacteriological Examination of samples of bull semen, in progress.

K. A. D. P. S. Seneviratna :

Survey of the helminth parasites of poultry in Ceylon, in progress.

Study of the life history of *Anafilaroides restratus* in cats, in progress

Survey of helminth parasites of cats, in progress.

Study of prophylactic effects of Caricide on Kidney worm infection of Swine, in progress.

Study of therapeutic effect of Nivaquin (Chloroquin sulphate) on piroplasmiasis of dogs, in progress.

C. St. George :

Bacteriological Examination of milks, etc., from cases of Mastitis, in progress.

Study of Staphylococci from various species and conditions, in progress.

C. A. McGaughey, Infections Myelitis of Felines, published in Ceylon Veterinary Journal (March, 1954), Vol. II, No. 1, 18.

K. A. D. P. S. Seneviratna and C. P. Pillai, *Stephanurus dentatus* (Kidney worm) infection of swine in Ceylon, published in Ceylon Veterinary Journal, June, 1954, Vol. II, No. 2, 52.

K. A. D. P. S. Seneviratna :

Syngamus McGaugheyi Sp. Nov. in Domestic Cats in Ceylon, published in Ceylon Veterinary Journal (June, 1954), Vol. II, No. 2, 55.

Diabetes mellitus in a bitch, published in Ceylon Veterinary Journal (June, 1954), Vol. II, No. 2, 61.

- C. A. McGaughey, E. E. Schmid, C. St. George and T. Velaudapillai, *Salmonella* Infections of Domesticated and Wild Animals in Ceylon, published in Ceylon Veterinary Journal (Dec., 1954), Vol. II, Nos. 3 and 4, 86.
- C. A. McGaughey, K. A. D. P. S. Seneviratna and C. St. George, Paratyphoid (Necrotic Enteritis) of pigs in Ceylon, Report of an out-break associated with *S. Paratyphi B.* and *S. adelaide*, published in Ceylon Veterinary Journal (December), Vol. II, Nos. 3 and 4, 89.
- C. St. George, *Salmonella adelaide* associated with gastro-enteritis in a dog, published in Ceylon Veterinary Journal (Dec., 1954), Vol. II, Nos. 3 and 4, 91.
- P. Pillai and K. A. D. P. S. Seneviratna, Kumri (Syn Kamri) in Horse associated with ocular setariasis with a short note on attempted treatment, published in Ceylon Veterinary Journal (Dec., 1954), Vol. II, Nos. 3 and 4, 92.
- C. St. George and P. B. K. Pillai, *Streptococcus agalactiae* associated with multiple abscesses in a recently captured wild elephant, published in Ceylon Veterinary Journal (Dec., 1954), Vol. II, Nos. 3 and 4.
- C. A. McGaughey (Collaborating with E. E. Schmid and T. Velaudapillai, M.R.I. and C. St. George), *Salmonella* infections of domestic and wild animals in Ceylon, a paper read at the Annual Congress of Ceylon Association for Advancement of Science, 1954.
- K. A. D. P. S. Seneviratna, Helminths of Animals in Ceylon, a paper read at Annual Congress of C.A.A.S., November, 1954.
- C. A. McGaughey and K. A. D. P. S. Seneviratna, Editoring of Ceylon Veterinary Journal, Vol. II, Nos. 1 and 4.

DELHI

Anthropology

Ph. D.

- Ram Rattan, Socio-Ethnic Studies of the Bhangies of Delhi, begun on 18-7-1949.
- Bihari Verma, Ethnological studies among the Uraons of Chhotanagpur (Bihar), begun on 18-7-1949.
- Miss Krishna Dutt, Periodicity in Women in Northern India, begun on 1-7-1953.
- Inder Paul Singh Monga, the Inheritance of Fingerball Patterns, begun on 1-10-1953.
- S. C. Tiwari, Ethnological study of the Rajis, begun on 19-7-1950.

Botany

Ph. D.

- Om Prakash Garg, Morpho-physiological studies of growing points in plants, begun on 18-7-1950.
- C. S. Venkatesh, Structure and special dehiscence of anthers in the Angiosperms, begun on 18-7-1951.
- Gir Raj Sinrohi, Physiological studies of growth and yield characters in crop plants, begun on 18-1-1952.
- S. N. Dixit, The life-histories of *Ameioma Lepeostegens* and *Tapinanthus*, begun on 18-7-1952.
- John Peter Correa, Embryological studies on the Viscoideae, begun on 1-10-1952.
- Miss Nirmal Narang, The Morphology and Embryology of *Ephedra*, begun on 1-10-1952.
- R. N. Kapil, Morphological and embryological studies in the family Euphorbiaceae, begun on 1-10-1952.
- Ramesh Chandra Sachar, Chemical stimulation of ovary and ovule, begun on 18-7-1953.
- Miss Manasi Ghosh :
- (1) Morphological and embryological investigations in the Santalaceae : *Exocarupus*, *Camandra*, *Leptomeria* and *Choretrum*, begun on 18-7-1953.
 - (2) Studies on pollen germinations in some flowering plants, begun on 18-7-1953.
- Miss Sulbha Kumari, Embryology of the Centrospermales, begun on 18-7-1953.
- Jai Kishan Maheshwari, The ontogeny, morphology and physiology of extra-floral nectaries in Angiosperms, begun on 18-7-1953.
- Mrs. S. M. Gupta, Physiological and Biochemical studies in the pre-sowing hardening treatment of crop seeds for inducing drought resistance, begun on 18-7-1953.

- Ram Nath Chopra, Chemical stimulation of ovary and ovule, begun on 18-7-1953.
- R. Narayana, Morphological and embryological studies of the sub-family Loranthoideae : *Lysiana*, *Dendrophthoe*, *Taxillus*, and *Nuytsiam*, begun on 18-7-1952.
- B. D. Sanwal, Cytogenetical studies in some Ascomycetes, begun on 18-1-1952.

Chemistry

Ph. D.

- N. R. Banerjee, Studies in the Constitution and Synthesis of flavone derivatives, begun on 18-7-1950.
- Sri Ram Gupta, Isolation and constitution Authoxaulthin glycondes, begun on 18-7-1950.
- Jag Mohan Sehgal, Use of N-Bromosuccinimide in the Synthesis of benzo-pyrone derivatives, begun on 18-7-1950.
- M. Krishnamurthy, Synthesis of isoflavone derivatives, begun on 1-10-1950.
- S. Neelakantan, Chemical Investigation of Indian Lichens, begun on 8-1-1952.
- H. S. Mehra, Studies in the Chemistry of free radicals in Solution, begun on 8-1-1952.
- D. Rajagopalan, Synthetic experiments in the Benzo-pyrone series, begun on 18-7-1951.
- Anand Ram Gupta, Electro-Chemical studies of typical colloids specially silver halides, begun on 18-7-1951.
- Bal Krishan Sharma, Electro Chemistry of layer lathice silicates, begun on 1-10-1951.
- Baldev Khosla, Electro-chemical study of colloidal electrolytes, begun on 8-1-1952.
- Shiv Chandra Duba, Electro-Chemical properties of some condensation polymers in relation to their structure, begun on 18-7-1953.
- Ishwar Dass, Chemistry of extractives from Heartwoods, begun on 18-7-1953.
- Om Prakash Mittal :
- (1) Chemical investigation of India Lichens, begun on 18-7-1953.
 - (2) Nuclear reduction in Xanthenes, begun on 18-7-1953.
- Vinod Kumar Ahluwalia :
- (1) Antibiotics from Heartwoods, begun on 18-7-1953.
 - (2) Synthesis of certain naturally occurring compounds, begun on 18-7-1953.
- Miss Bimla Pure, Survey of Arthoxanthics, begun on 1-10-1952.
- Virendara Nath Gupta, Synthematic experiment, some natural products, begun on 18-7-1953.
- Moti Lal Dhar, Synthetic experiment in isoflavone series and Chemical investigation, begun on 18-7-1953.
- Raj Kumar Dewan, Electro-Chemical properties of synthetic resins, begun on 18-7-1953.
- Gyanendra Mohan Sexana, Organic reagents in Inorganic Chemistry, begun on 1-10-1953.
- M. V. Ramakrishna Rao, Study of Silicate minerals by Electron diffraction, begun on 1-10-1953.

Humanities

Ph. D.

- S. R. Choudhuri, Al-Hajaj b. Yusuf ath-Tahaqafi, An examination of his work and personality, begun on 29-1-1954.
- Asoke Kumar Chatterji, Themes and Conventions of Elizabethan Comedy, begun on 29-1-1954.
- Govind Narain Sharma, Samuel Butler and his relation to the thought of his time, begun on 29-1-1954.
- Braham Swarup, Personality deviation in high school children (Their Causes and Control), begun on 17-11-1950.
- B. D. Bhatia, An Investigation of the Incidence and Causation of recessive or withdrawing behaviour in school children, begun on 17-11-1950.
- Vidya Prakash Uppal, A Study of Achievement in English in the Middle Classes, begun on 17-11-1950.
- Suntee Dutt, Prognostic Value of Higher Secondary School Examination in Delhi, begun on 8-8-1951.
- Anant Nanda, A Study of Psychological needs of adolescent girls in Delhi Schools and their bearing on individual adjustment, begun on 8-8-1951.
- Som Nath Saraf, Preparation and Standardisation of Tests in Indian History for Classes IX, X and XI of the Higher Secondary Schools, Delhi, begun on 19-1-1953.
- Suresh Chandra Shukla, Indian Education under the British—A study on the Political, Economic and Ideological bases of development, begun on 24-8-1953.
- Sneh Lata Puri, Maturation of various Mental Abilities, begun on 24-8-1953.
- Kshnika Bose, A Psychological study of Institutionalized Children with a view to understanding the Etiology of Problem (Behaviour in such children), begun on 19-10-1953.
- Udai Pareek, A Psychological Study of Frustration in Indian Children and its implication for Education, begun on 29-1-1954.
- S. K. Mukerjee, India's Foreign Trade in the Indian Ocean Region, begun on 5-12-1947.
- R. V. Krishna Naidu, Public expenditure in India between the two wars, 1919-1939, begun on 20-10-1947.
- Om Prakash Dhama, Economics of Mixed Farming in Delhi Region, begun on 26-10-1949.
- B. R. Kishore, The Capital Market in India, begun on 6-8-1947.
- H. Laxminarayana, Wage Variations in India, begun on 17-8-1948.
- V. Sree Ram, Joint Stock Banking in India, begun on 11-11-1949.
- P. B. Desai, Price Fixation with special reference to India, begun on 20-8-1949.
- K. P. M. Sundram, Prices in India, 1929-1949, begun on 11-11-1949.
- M. B. Deshmukh, Agricultural labour in Madhya Pradesh, begun on 2-9-1950.
- Har Prashad Sharma, Economic implications of the abolition of zamindari, begun on 2-9-1950.
- K. S. L. Panikkar, Currency and prices in the post-war period, begun on 2-9-1950.
- R. N. Mitra, An economic analysis of the locational aspect of Farming in India.

- S. Thotapali, Crop patterns and the economics of crop planning in India, begun on 29-1-1951.
- Mrs. S. Thaper, A survey of differential fertility, begun on 29-1-1951.
- Ashish Bose, Some aspects of the population problem, begun on 8-8-1951.
- B. Nanjundaiya, Burden of taxation in India, begun on 8-8-1951.
- Sulekh Chandra Gupta, Agrarian relations in U.P. in the 19th century, begun on 8-8-1951.
- Kailash Chandra Sharma, India's post-war monetary problems, begun on 8-8-1951.
- G. Varde Gowada, Wages and Productivity in Mysore Industries—A Historical and Statistical Study, begun on 7-11-1951.
- N. K. Pant, The Structure of Trade Unionism in India with particular reference to U.P., begun on 24-8-1953.
- N. Nagalakshmi, The Economic Development of Hyderabad State—A historical and analytical study (1921-1951), begun on 19-10-1953.
- Krishna K. Sehgal, The Indian Jute Industry—A Historical and Analytical Survey, begun on 19-10-1953.
- R. K. Dar, The Economics of Capital Accumulation, begun on 19-10-1953.
- Prasad Kumar Ghosh, Economic Controls in a Planned Economy, begun on 19-10-1953.
- Kissen Kanungo, The Economics of Multi-purpose River Valley Projects, begun on 27-8-1952.
- Nisit Kumar Das, A Study in the problem of Capital Formation in India, begun on 5-11-1952.
- S. Sivasubramanian, National Income of India—1900-1950, begun on 5-11-1952.
- Rajinder Kumar Parashar, Economics of Well Irrigation in Ganges Valley, begun on 5-11-1952.
- Manik Lal Nahar, Community Projects in India, begun on 5-11-1952.
- G. Parthasarathy, Land tenure in Andhra and Telengana—A historical, comparative and critical study, begun on 29-1-1953.
- B. N. Joshi, Analysis of farm accounts in Hyderabad with special reference to capital formation in agriculture, begun on 27-8-1952.
- R. V. Kulkarni, Economic conditions in Bombay Karnatak (Historical, Analytical Study—1900-1950), begun on 29-8-1949.
- K. P. Narasimhan, Business forecasting with special reference to India, begun on 5-11-1952.
- C. M. V. Sharma, Economic aspect in Indian Constitution, begun on 29-1-1953.
- Prem Prakash Srivastava, International Monetary Co-operation in the post-war period, begun on 20-10-1947.
- Teja Singh Grewal, The India Tea Industry (An Economic Survey), begun on 24-8-1953.
- Chandra Kumar Johri, Wage and prices in some selected area in northern India (1800-1830), begun on 24-8-1953.
- P. N. Dhar, A study of the Light Engineering Industry, begun on 24-8-1953.
- John Kersome Thavraj, Trends in Public Investigation in India, begun on 19-10-1953.
- V. Snatak, A Critical Study of Radha Ballabh with special referennce to Hit Hari Vansh : its founder, begun on 23-3-1948.
- Balraj Mahajan, Hindi Ka Nibandha Sahitya, begun on 5-11-1952.

- Sneh Lata Srivastava, Hindi Kavya men Bhramar Geeta Parampara, begun on 29-1-1951.
- Satya Dev Choudhuri, Hindi Riti Parampara Ke Pramukh Acharya, begun on 29-1-1951.
- Gargi Aggarwal, A Study of Keshava Dass with special reference to Ram Chandrika, begun on 5-11-1952.
- Sushma Srivastava, Growth of Nationalism in Hindi Literature since 1919 up-to-date, begun on 5-11-1952.
- Man Mohan Gautam, Craftsmanship of Surdas, begun on 19-1-1953.
- Asha Mathur, Hindi Kavya men Vatsalya Ras, begun on 24-8-1953.
- Ram Swarup, Hindi men Niti Kavya Ka Vikas (up to 1900 A.D.), begun on 24-8-1953.
- Raj Kumari Mathur, Hindi Sahitya aur Bhasha ka Vikas men Rajat-pat-Rangmanch aur Akasha-Vani ka Yogdan, begun on 24-8-1953.
- Madhur Malti Garg, Adhinika Hindi Kavya men Virah, begun on 24-8-1953.
- Bharat Bhushan Saroj, The Shringar Satsai Literature in the Riti Period—A Critical Study, begun on 24-8-1953.
- Bimla Rani, Hindi Sahitya aur Bhasha ka Vikas men Patrikaon ka Yogadan, begun on 24-8-1953.
- Bimla Gupta, Adhunik Hindi Giti Kavya ka Vikas, begun on 24-8-1953.
- Suresh Chandra Gupta, Hindi Kaviyon Ka Kavya Sihanta, begun on 24-8-1953.
- Uma Kant Goel, Kavi thatha Bharatiya Sanskriti ke Akyata—roop men Maithili Sharan Gupta ka Adhyayan, begun on 24-8-1953.
- Ram Singh Chauhan, Hindi Kavita men Janvadi Pravrittian, begun on 24-8-1953.
- Johri Lal Aurora, Upaniaskar Premchand ki Vichardhara ka Vikas, begun on 24-8-1953.
- Brij Narain Sharma, Social and Cultural History of Northern India from 7th century A.D. to 12th century A.D., begun on 7-11-1951.
- S. V. Desika Char, Legislative Centralization in the Government of India, (1833-1870), begun on 31-7-1946.
- Devendra Nath Panigrahi, Resistance to British Rule in India from 1800 to 1857, begun on 5-11-1952.
- Krishna Nand, Delhi Under Mahadaji Sindia (1785-1795), begun on 19-1-1953.
- Ballabh Das Burman, Influence of Russian Diplomacy in Central Asia of India's Foreign Relations, begun on 5-11-1952.
- Lalita Virmani, Social Life in Northern India in the first half of the 19th century with special reference to the position of women, begun on 24-8-1953.
- Rameshwar Dayal Mathur, Minor Sultans of Delhi, begun on 24-8-1953.
- Shiva Dua, Social Conditions in Northern India in the second half of the 19th century with special reference to the position of women, begun on 24-8-1953.
- Syed Hasan Mehdi, Means of transport and communication during the Medieval period (with special reference to Northern India), begun on 19-10-1953.
- Fauja Singh Bajwa, Military System of the Sikhs during the first half of the 19th century, begun on 29-1-1954.
- Nirmala Joshi, A History of the Indian Musical Instrument, begun on 29-1-1954.

- D. R. Krishna Rao, Isolation of optional facet in Agriculture, etc., begun on 8-8-1951.
- Murari Lal Nagar, Library Classification and the Science of Interpretation (Mimansa Sastra), begun on 8-4-1948.
- Mahendra Kumar Singhal, Differential Geometry, begun on 5-11-1952.
- Hansraj Mehra, Riemannian Geometry, begun on 5-11-1952.
- Bhupendra Swarup Jain, Astro-physics, begun on 24-8-1953.
- Krishna Kumar Gorwara, A Study of Ruled surfaces by Tensor Methods and Duelistic Vectorial Calculus, begun on 19-10-1953.
- Som Prakash Aggarwal, Theory of Ballistics (Internal and External), begun on 19-10-1953.
- Raj Nath Kaul, Differential Geometry, begun on 29-1-1954.
- Daroga Singh, Statistics, begun on 29-1-1954.
- Shiv Kumar Sharma, Ballistics (External and Internal), begun on 29-1-1954.
- Surinder Kumar Kohli, A Critical Study of Adi-Granth, begun on 5-11-1952.
- Prakash Vati Tandon, Philosophy of Bradley, begun on 27-8-1952.
- Vijay Kumar Dhar, The Concept of Right and Good in Contemporary Ethics, begun on 23-9-1952.
- Shiva Murti Tewari, The Philosophy of Sir S. Radhakrishnan, begun on 27-8-1953.
- Bimla Saxena, The Theories of Error in Indian Philosophy, begun on 24-8-1953.
- Sushil Chandrika Prakash, Naturalistic Ethics, begun on 24-8-1953.
- Pratap Singh Mehra, Our Knowledge of the External World, begun on 24-8-1953.
- Hamendra Nath Banerjee, Gandhian Philosophy of Work and Basic Education, begun on 24-8-1953.
- Joginder Singh, Value, Individual and Society, begun on 19-10-1953.
- Vidya Wati, Objectivity of Moral Values, begun on 19-10-1953.
- Sushil Kumar Saxena, The Nature of Beauty, begun on 29-1-1954.
- Kanwar Lal Aggarwal, Yoga as a Science of Psychological Integration, begun on 29-1-1954.
- A. K. Sankaran Nayar, Nationalism in Indonesia, begun on 19-1-1953.
- K. Srikantan, Regionalism in International Affairs, begun on 24-8-1953.
- Ved Prakash Luther, The Experiment of Secular State in India, begun on 24-8-1953.
- Urmila Goel, India and I.L.O., begun on 24-8-1953.
- Krishna Narayan Malik, Public Administration in Panjab, between 1849-1919, begun on 29-1-1954.
- R. Rajjapa Setty, Panchayats and Democracy in India, begun on 24-8-1953.
- Rama Saxena, A Critical Study of Katha Literature in Sanskrit, begun on 7-11-1951.
- Ramasharya Sharma, A Critical Study of Raso Literature, begun on 1-2-1950.
- Vishnudatta Tikamchand Bhardwaja, Conception of the Trinity in the Veda, the Purana and the Tantra, begun on 29-1-1951.
- M. R. Sharma, The Hindu Doctrine of Incarnation, begun on 5-11-1952.
- Gopal Ram, Origin and Development of Hindu Penology, begun on 19-1-1953.
- Nomita Deb, A Study of legends in the Brahmanas and the Upanishads, begun on 24-8-1953.
- Raghuvir Singh Varma, Hindu Polity as described in the Mahabharat, begun on 24-8-1953.

- Kusum Kumari Goel, The indebtedness of the major Sanskrit poets to Valmiki Ramayana, begun on 29-1-1954.
 S. P. Vashisht, Urdu men Geeton Ka Sarmaya, begun on 29-1-1951.
 Ghulam Ahmad Furquat, Satire and Humour in Urdu Poetry, begun on 19-10-1953.

Physics

Ph. D.

- Ishwar Chand Gupta, Cosmic Rays, begun on 18-7-1951.
 Gurdev Singh Bajwa, Cosmic Rays, begun on 18-7-1954.
 Rajat Kumar Ray, Magneto-hydro-dynamic Waves, begun on 18-7-1951.
 Surinder Kumar Trehan, Theory of Fundamental Particle, begun on 18-7-1952.
 Inderjit Singh, Effect of E. M. Radiation on Lamb Shift and Allied Problems, begun on 18-7-1952.
 Ramesh Chander, Statistical Thermodynamics, begun on 8-1-1953.
 Jagdish Swaroop Baijal, Statistical Thermodynamics, begun on 8-1-1953.
 S. M. Bhagat, Statistical Thermodynamics, begun on 18-7-1953.
 Kanwal Kishore Singh, Statistical Thermodynamics and Electrodynamics, begun on 18-7-1953.
 B. Bhowmik, Cosmic Rays, begun on 18-7-1954.
 Mahendra Singh Vardya, Statistical Thermodynamics, begun on 18-7-1954.
 Satya Pal Talwar, Astrophysics, begun on 1-10-1953.
 Jagdish Narain Tandon, Astrophysics, begun on 1-10-1953.
 Kuldip Parkash Chopra, Astrophysics, begun on 8-1-1954.

Zoology

Ph. D.

- Miss S. L. Chaube, Morphology, Anatomy and Bionomics of *Uromastix harwickii*, with a view to write a memoir, begun on 18-7-1948.
 B. G. Kapoor, The Anatomy and histology of the alimentary canal of fishes with different food and feeding habits, begun on 18-7-1949.
 H. S. Vishnoi, Morphological studies of Isoptera (the Termites), begun on 1-10-1949.
 B. B. L. Mathur, Respiration in some of the siluroid fishes of Delhi, begun on 1-10-1949.
 P. S. Menon, Chromosome studies—Indian Insects, begun on 18-7-1951.
 R. V. Rajamannar, Skeleton and soft parts of pigeon, begun on 18-7-1951.
 K. Rajendra Paul Singh, Nutritional requirements of *Trogoderma granaria* and other insects, begun on 8-1-1953.

GAUHATI

Arts

D. Phil.

- Ajit Kamar Sarma, Development of Local Self-Government and Administration in Assam, begun in 1953.
Anil Kumar Sarma, Economic Development of Assam in Modern Times (1826-1940), begun in 1953.
Smt. Lakshmi Devi, Tribal Relations during the Ahom period, begun in 1952.
Smt. Lakshyahira Das, Problem behaviours of Children in Assam, begun in 1954.
Maheswar Neog, Sankardeva and his times, begun in 1951.
Nalini Kanta Chakravarty, Government and Administration of Tripura State from 1765-1947, begun in 1954.
Praphulladutta Goswami, The Folk-lore of Assam, begun in 1951.
Pramode Chandra Bhattacharyya, On Bodo Language and Culture, begun in 1951.
S. S. Sengupta, Mathematical Theory of Economics : The Principle of Identification, begun in 1948.
Satyendra Nath Sarma, The Growth and Development of the Vaishnavite Institutions of Assam, begun in 1951.
Siddheswar Saikia, Teachers Education with special reference to Assam, begun in 1954.
Upendra Chandra Goswami, A Study on Kamrupi Dialects, begun in 1953.
V. B. Misra, A History of the Gurjara-Pratiharas, begun in 1947.

Ph. D.

- K. Krishnamurti, Interaction of Government finances on the Money and Capital Markets, begun in 1951.

Science

D. Phil.

- A. K. Banerjee, Structural and Metamorphic Petrology of the Metamorphites of the Khasi Plateau, begun in 1952.
B. K. Nayar, Diseases of Potato, begun in 1952.

Ph. D.

- P. N. Kachroo, Cytomorphological studies in Indian Hepaticae with particular reference to Merchantiales, begun in 1948.

GUJARAT

B. J. Institute of Learning & Research, Ahmedabad

Ancient Indian Culture

Ph. D.

Miss Shah Saroj, B., A Historical account of the various creeds prevalent in Gujarat and their effect on its caste-structure, begun in July, 1952, likely to be completed in 1954.

Mazumdar Harshadrai, A., Cultural data supplied by some of the sculptural remains at Patna, begun in July, 1952, likely to be completed in 1954.

Botany

L. D. Arts College, Ahmedabad

Ph. D.

Patel Chaturbhai, M., Embryology in Barseracial and allied ordens, begun in July, 1952, likely to be completed in 1954.

Chemistry

Gujarat College, Ahmedabad

M. Sc.

Oza Gunvant, T., Reactions of Hyponitrites and nitrites by a study of (a) the action of nitric oxide on nitrites and nitrates, (b) action of charcoal on nitrites, begun in February, 1952, likely to be completed in 1954.

Miss Sacha Mabel, J., Synthesis of Acridine derivatives, begun in July, 1952, likely to be completed in 1954.

Mewada Govind, S., Studies in Coumarins, begun in July, 1952, likely to be completed in 1954.

Yekindi Kushal, G., Synthesis of Acridine derivatives, begun in July, 1952, likely to be completed in 1954.

Salimath Rajashekharaya, S., Hydroxy-carboxyl compounds, begun in July, 1952, likely to be completed in 1954.

Ph. D.

Ghatge Navasaheb, B., Chemical investigation of some plants and their products, begun in July, 1952, likely to be completed in 1953.

Setalvad Jagdish, I., Studies in Hetrocyclic compounds and some charcoal derivatives, begun in July, 1952, likely to be completed in 1953.

Patel Chandrakant, C., Study in chalkones, begun in July, 1952, likely to be completed in 1954.

Thaker Rajnikant, H., Reactions of nitrites, begun in July, 1952, likely to be completed in 1954.

Oza Vasantraai, T., Reaction of Hyponitrites, begun in July, 1952, likely to be completed in 1954.

L. D. Arts College, Ahmedabad

Ph. D.

Shah Rasiklal, K., Study of Alkali soils in Gujarat, begun in December, 1952, likely to be completed in 1954.

M. Sc.

Dalal Sushila, L., Synthesis of Potential chemico therapeutic agents, begun in July, 1952, likely to be completed in 1954.

Desai Ramanlal, The Azo hydrazone Isomerism D-hydroxy-azo-dyes, begun in December, 1952, likely to be completed in 1954.

Genge Rajnikant, K., Synthesis of potential chemotherapeutic agents, begun in August, 1952, likely to be completed in 1954.

Desai Sumantrai, C., Bromination and nitration of Brenthols, begun in December, 1952, likely to be completed in 1954.

V. P. Mahavidyalaya Vallabh, Vidyanagar

M. Sc.

Desai Ramanlal, M., Study on the oximes of aceto-acetic ester and its derivatives, begun in July, 1952, likely to be completed in 1954.

Patel Kantilal, C., Studies in Absorption, begun in July, 1952, likely to be completed in 1954.

Patel Ashvinkumar, P., Study on carbonisation wood in presence of Inorganic salts, begun in July, 1952, likely to be completed in 1954.

M. T. B. College, Surat

Ph. D.

Mapara Ranjital, K., Synthesis of 4-Hydroxy quinolines and Brahination of Ethyl B, etc., begun in July, 1952, likely to be completed in 1953.

Kazi Hemlata, J., Studies in Emulsions and Inter-facial tension and complex formation, begun in June, 1952, likely to be completed in 1953.

Bandiwala Bipinchandra, P., Studies in Hydroxy quinoline derivatives, begun in July, 1952, likely to be completed in 1953.

Samaldas College, Bhavanagar

Ph. D.

Chandorikar Mukund, J., Investigation of composition and standardisation of the methods of certain foods, begun in March, 1952, likely to be completed in 1954.

Commerce

Sir K. P. College of Commerce, Surat

Ph. D.

Jakate Manohar, N., Cotton co-operatives with special reference to southern Gujar, begun in July, 1952, likely to be completed in 1954.

Bhatt Rajendraprasad, N., Co-operative financing with special reference to southern Gujarat, begun in July, 1952, likely to be completed in 1954.

Economics

H. L. College of Commerce, Ahmedabad

Ph. D.

- Namjoshi Dattatraya, S., Financial & Real burden of the second world war, begun in July, 1952, likely to be completed in 1954.
- Soman Ramchandra, J., Peaceful Industrial relations, their science, technique & management, begun in September, 1952, likely to be completed in 1953.

Education

A. G. Teachers College, Ahmedabad

Ph. D.

- Sheth Chimanlal, B., History of Jain Education, begun in December, 1952, likely to be completed in 1954.
- Patel Shambhuprasad, M., Wastage in secondary education in Gujarat, begun in December, 1952, likely to be completed in 1954.
- Patel Jayakumari, S., Teaching personnel in Secondary Education of Gujarat, begun in December, 1952, likely to be completed in 1954.
- Trivedi Ramanlal, S., Influence of political and social ideas on Indian education during the past 150 years, begun in December, 1952, likely to be completed in 1955.
- Shah Bakulchandra, L., Reorientation of our secondary school curriculum, begun in December, 1952, likely to be completed in 1955.

Geology

L. D. Arts College, Ahmedabad

Ph. D.

- Khot Sadashiv, K., Petrology & Petrography of rocks of Rajasthan, begun in July, 1952, likely to be completed in 1954.

Gujarati

Gujarat College, Ahmedabad

Ph. D.

- Bhatt Upendra, R., Biography in Gujarati literature, begun in January, 1952, likely to be completed in 1954.
- Dave Indravadan, K., Kalapi—A study, begun in January, 1952, likely to be completed in 1954.

Philosophy

L. D. Arts College & M. G. Sc. Institute, Ahmedabad

Ph. D.

- Miss Shah Jaya Lalbhai, Social Philosophy of Bertrand Russell, begun in January, 1952, likely to be completed in 1954.
- Khajanchi Mulchand, G., The Significance of Kant as revealed in his relations to pre-Kantian and post-Kantian thinkers, begun in July, 1952, likely to be completed in 1954.

Buch Priyakant, M., The Ethical Philosophy of Sidwick and its place in the development of hedonism, begun in June, 1952, likely to be completed in 1954.

Physics

Physical Research Laboratory, Ahmedabad

Ph. D.

Nerurkar Narayan, W., Investigation on a cosmic Ray, begun in September, 1952, likely to be completed in 1955.

Bhavsar Prafulchandra, D., Studies on cosmic Rays, begun in December, 1952 likely to be completed in 1954.

Nettimi, S. B., Meteorology, begun in December, 1952, likely to be completed in 1954.

M. Sc.

Degaonkar Srinivas, S., Studies in Tropical Meteorology, begun in November, 1952, likely to be completed in 1954.

Politics

M. N. College, Visnagar

Ph. D.

Shrivastav Ram Biharilal, Bombay Mayor's Court—Its origin, development, begun in April, 1952, likely to be completed in 1955.

Sanskrit

B. J. Institute of Learning & Research, Ahmedabad

Ph. D.

Miss Kulkarni Shanta, G., Thesis on Sanskrit Drama & Dramaturgy, begun in August, 1952, likely to be completed in 1954.

Samaldas College, Bhavanagar

Ph. D.

Betai Ramesh, S., Reconstructions of the original Interpretation of the Manusmriti, begun in January, 1952, likely to be completed in 1954.

Bhatt Vinayakray, L., Philosophical tracts of the Mahabharat with special reference to Shanti Parvan, begun in July, 1952, likely to be completed in 1954.

Bahauddin College, Junagadh

M. Sc.

Miss Parikh Urmila, J., Philosophical passages of Bagavad Gita, begun in February, 1952, likely to be completed in 1954.

Zoology — Entomology
Samaldas College, Bhavanagar
M. Sc.

- Dalal Navinchandra, M., The contribution to the morphological study of gryllotalpa, begun in August, 1952, likely to be completed in 1954.
- Gupte Ramchandra, Y., Contribution to study of parasite insects on the fruit plants in Bhavnagar with particular reference to the insects parasite on Punica, Ghanatum, Psidium, Guyava, Cucurbita, Coccinia, Indica, etc.

KARNATAK

Ancient Indian Culture

Basaveshwar College, Bagalkot

L. G. Hiremath, Cultural Aspects of Veerashaivism.

Botany

Karnatak College, Dharwar

Dr. H. D. Noronha and S. M. Jorapur, Embryological Studies in the Com-
bretaceae, completed.

Dr. H. D. Noronha, Growth controlling effects of 2-4 D and other com-
pounds on various species of plants, in progress.

S. R. Panchgavi, Systematic and Ecological Studies on the Lichens of the
Karnatak, in progress.

S. G. Bharati, Systematic survey of the Zygnemales of Bombay Karnatak,
in progress.

V. S. Yalavagi, Algae of the cultivated soils of the Karnatak, in progress.

Chemistry

University Department of Chemistry, Karnatak University, Dharwar :—

Preparation of Di-chloropropiophenones, completed.

A convenient mode of preparation of dichlorobenzaldehydes, completed.

Possible plant Hormones, Di-chlorothio Phenoxy acetic acids, completed.

Anthelmenics Friedal Crafts condensation of succinic anhydride with
thiocresol methyl ethers, in progress.

Anthelmentics Friedal Crafts condensation of succinic anhydride with
chlorophenyl methyl sulphides, in progress.

Reaction of Ethyl acetone dicarboxylate with substituted anilines, in
progress.

Synthesis of P-Dimethylamino succinic acid, in progress.

Synthesis of methyl and Chlorine analogues of Papaverine, in progress.

Antibacterials, substituted diaryl sulphides sulfoxides and sulphones,
in progress.

Anticonvulsents, derivatives of substituted benzyl amines, in progress.

Karnatak College, Dharwar

V. M. Dixit and Ramesh Badu, Studies in Pechmann Reaction : Extension
of the reaction to chloralides of phenols, and reduction of coumarin-4-
acetic acids.

K. S. Nargund and R. B. Kanti, Studies in chalcones and chalkone dibro-
mides.

- K. S. Nargund and V. R. Dani, Synthesis of α β alkyl-sulphonyl-phenyl-butyro lactones.
- K. S. Nargund and V. N. Deshpande, Synthesis of 4-phenyl analogues of papavarine.
- K. S. Nargund and S. K. Baligidad, Studies in Friedal and Crafts Reaction.
- K. S. Nargund and S. B. Patil, Synthesis of Chloromethoxy α β phenyl ethyl amines.
- K. S. Nargund and M. M. Deshpande, Synthesis of papavarine analogues with Halogen substituents.
- R. C. Badami and M. M. Deshpande, Chemical examination of the fruits of *Pedaliium Murex*.
- K. S. Nargund and R. C. Badami :
- Synthesis of analogues of Nordihydro-guaiaretic acid (NDGA).
- Chemical examination of the Bard of *Holoptalea Integri folia*, published in Proceedings Ind. Science Congress, 1952, Calcutta.
- Chemical examination of *Calophyllum Inophyllum*, published in Proceedings Ind. Science Congress, 1953, Lucknow.
- Chemical examination of oil of *Holoptalea Integri folia*.
(All the above 12 works have been completed.)

English

Karnatak College, Dharwar

Principal V. K. Gokak completed research on the following subjects :

- An essay on Poetry and the Modern Consciousness, published in Shri Aurobindo Mandir Annual, 1954.
- A brief thesis on Sri Aurobindo and Aesthetics, published serially in Mother India during 1954.
- A paper on the Impact of Western Thought on Eastern Art-forms and Aesthetics prepared for the Asiatic Cultural Conference held in Rangoon on 19th February, 1955.

Research thesis on the following subjects for the Ph.D. degree are in progress :

- R. K. Kanabarkar, The Impact of India on the English Mind, as represented in English Literature.
- B. N. Joshi, Aldous Huxley.
- M. K. Naik, Somerset Maugham—A study in the evolution from cynicism to Humanism.
- S. R. Mokashi, The Poetry of W. B. Yeates : The last phase.
- S. B. Minajgi, The Persistance of Tradition in Modern English Poetry (1900-1950).
- L. B. Patil-Kulkarni, Marie Correilli : A study in her philosophy, success and artistic mediocrity.
- T. V. Aswathanarayana Rao, G. M. Hopkins : His critical theories as illustrated by his own poetry.
- T. F. Murshillin, Twentieth Century Literary Criticism, Some Aspects.
- V. M. Dibbi, The Scientific Romance in English Literature.
- B. R. Majali, The Personal Essay in 20th Century English Literature.

Kannada

Kannada Research Institute, Dharwar

Ph. D.

- A critical study of the Haridasas of Karnatak, completed.
 Character and Study of Kannada Literature of the 11th century A.D., completed.
 Jagannatha Dasaru, completed.
 The Kannada Literature during the period of Keladi Chiefs, completed.
 The Development of Yakshagana, in progress.
 Women writers of Karnatak, in progress.
 Basveshvara, in progress.
 Influence of Dravidian Linguistics on Indo-Aryan, in progress.
 Sonda Dynasty, in progress.
 Kannada Folk Songs, in progress.
 Kodagu Language—A dialect study, in progress.
 Worship of Sun God in Bombay-Karnatak, in progress.
 Kannada Jain Works, in progress.
 Bahubali in Kannada Literature, in progress.
 Navayats of Kanara, in progress.
 Sociological significance of system of names with special reference to names in Kerala, in progress.
 Copper-plates of Bhoja Kapalivarman and Bhoja Asankitavarman, in progress.
 Abaluracharite, in progress.
 Trends in the Post-Independence Kannada Literature, in progress.
 Destitute women in Dharwar, in progress.
 Crime in Bombay-Karnatak, in progress.
 Linguistic Study of the Karna Parva in Kumara Vyasabharata, in progress.
 Palayagars of Vijayanagara, in progress.

Karnatak College, Dharwar

- The Works of Harihar, completed.
 Karnatak Theatre, completed.
 Jagannatha Dasaru, completed.
 The Development of Yakshagana, in progress.
 Women Writers of Karnatak, in progress.
 Basaveshwar and His Works, in progress.

R. P. D. College, Belgaum

- Prof. K. G. Kundanagar and Diwan Bahadur A. P. Chaugule, A Critical edition of Adi-puranam of Adi-Pampa, completed and published in 1953.
 B. S. Gaddagimath, Longer Narrative Folk-songs in Kannada, completed.
 Professor S. B. Shapeti of Rajram College, Social Order as depicted in Kannada Literature and inscriptions, in progress.

Lingaraj College, Belgaum

- A Research thesis on 'Nijaguna Shivayogi'—a philosopher-poet of Karnatak, is in progress.

Research on Sangama dynasty of the Vijayanagara Kings in general and Praudhadevaraya in particular, is in progress.

Research is being conducted with special reference to Kallumathada Prabhu-devaru and his magnum opus, 'Lingalila-vilasa-charitra.'

Department of Kannada Language and Literature, Karnatak University, Dharwar

Professor T. N. Sreekantaiya, Head of the Department of Kannada :

Bharatiya Kavyamimamse, a treatise in Kannada on Indian Poetics, with particular reference to the theories of Rasa and Dhvani, based upon independent investigation, published by the University of Mysore, 1953.

Affricates in Kannada speech, published in Indian Linguistics, Calcutta, 1954.

A critical edition of Nagavarma's 'Chandombudhi', an ancient Kannada work on Prosody, in progress.

A study of Dravidian Phonology, in progress.

R. C. Hiremath, Reader in Kannada :

An edition of 'Mahalingalile' a poetical work in Middle Kannada, published.

A Linguistic Investigation into the relationship of Indo-Aryan and Dravidian Languages.

A critical edition of Surangakavi's 'Trisastipuratana Vilasa' (A poetical work in Old Kannada), in progress.

A critical edition of Bhimakavi's 'Basavapurana' (A poetical work in Middle Kannada), in progress.

A Linguistic investigation of the place names in Karnatak.

A student for the Ph.D. degree is working upon the following subject :

The influence of English Poetry and Critical Thought on Modern Kannada Poetry.

Physics

Department of Physics, Karnatak University, Dharwar

N. R. Tawde and B. B. Laud, On working of some Theories of transition probabilities, published in Proc. Nat. Inst. Sci. India. Vol. XX. No. 3, 259, 1954.

N. R. Tawde and K. G. Parvatikar, A table for the calculation of Surface Tension from the measurement of Sessile Drops, published in Ind. Jr. Phys. Vol. 28, 1954.

N. R. Tawde and K. Gopalakrishnan, Study of Hulbert-Hirschfelder $U(r)$ function in C_2 (Swan) system, published in Ind. Jr. Phys. Vol. 37, 469, 1954.

N. R. Tawde and V. Rajeswari, Vibrational Temperatures in C_2 (Swan) system in rare gases and Ramsauer effect, published in J. Sc. Industr. Res. Vol. 13, 879, No. 12, 1954.

Prakrit (Ardhamagadhi)

Karnatak College, Dharwar

S. R. Bhide, Maharastri Language and Literature, in progress.

S. V. Dixit, Haribhadra and his works, in progress.

T. S. Kulkarni, Pushpadanta and his works, in progress.

Basaveshwar College, Bagalkot

C. J. Mangalgi, Gatha Sapta Sati.

Sanskrit

Basaveshwar College, Bagalkot

C. N. Deshpande, Interpretation of the Third Mandala of Rgveda.

Zoology

Karnatak College, Dharwar

Studies on the intestinal Protozoa of termites, millipedes and amphibians were carried out.

Studies on the comparative anatomy of the heart of reptiles on the marine fauna of the Karwar coast and on the structure and cytology of millipedes are in progress.

M A D R A S

Biochemistry

Ph. D.

- E. R. B. Shanmugasundaram (Sr. Lecturer) and Prof. P. S. Sarma, Professor, Inter-relationship among some Vitamins & Amino acids ; Factors affecting tryptophan Nicotinic acid inter-relationship, begun in January, 1951, completed in April, 1953, published in J. Mad. Univ. B., 1952, **22**, p. 84 ; J. Sci. & Ind. Res., 1953, **12B**, p. 24 ; Curr. Science, 1953, **22**, p. 211 ; Proc. Soc. Expt. Biol. & Med., 1953, **84**, p. 544 ; J. Sci. & Ind. Res., 1954, **13B**, p. 21 ; Curr. Sci., 1954, **23**, p. 16 ; J. Mad. Univ. B, 1954, **24**, p. 13.
- R. Radhakrishnamurthy, (Res. Asst.) & Prof. P. S. Sarma, Professor, Studies on the inter-relationship among Vitamins of the B group, begun in January, 1951, likely to be completed in January, 1955, published in J. Sci. & Ind. Res., 1952, **11B**, p. 27 ; Curr. Sci., 1953, **22**, p. 209 ; Proc. Soc. Expt. Biol. & Med., 1953, **84**, p. 544 ; Curr. Sci., 1954, **23**, p. 92.
- T. K. Sundaram (Govt. of India Sr. Res. Scholar) and Prof. P. S. Sarma, Influence of Vitamins on excretory pigments with particular reference to metabolism of tryptophan and nicotinic acid, begun in July, 1952, likely to be completed in January, 1955, published in Nature, **172**, p. 627, 1953 ; Proc. Soc. Expt. Biol. & Med., **84**, p. 544, 1953 ; Curr. Science, **23**, p. 92, 1954.
- V. M. Sivaramakrishnan (Government of India Sr. Res. Scholar) and Prof. P. S. Sarma, The Influence of certain Vitamins on Nitrogen metabolism, begun in February, 1951, likely to be completed in January, 1955, published in J. Sci. & Ind. Res., **12B**, p. 157, 1953 ; J. Mad. Univ., **23B**, p. 40, 1953.
- T. A. Sundararajan (Government of India Sr. Res. Scholar) and Prof. P. S. Sarma, Studies on the dephosphorylation of phosphoproteins, begun in August, 1953, likely to be completed in August, 1955, published in Curr. Sci., **22**, p. 340, 1953 ; Biochem. Jnl., **56**, p. 125, 1954 ; Biochem. Bioph. Acta. **13**, p. 588, 1954 ; Nature, **173**, p. 625, 1954.
- V. Srinivasan (Senior Res. Asst., C.S.I.R. Scheme) & Prof. P. S. Sarma, Studies on Iodoproteins and Goitrogenic Agents, begun in September, 1953, likely to be completed in August, 1955.

M. Sc.

- K. V. Rajagopalan (Government of India Jr. Res. Scholar) and Prof. P. S. Sarma, Investigation of Shark and other fish liver residues, begun in July, 1952, completed in January, 1954.
- K. Sivarama Sastry (Stipend Res. Scholar) and Prof. P. S. Sarma, Studies on Ascorbic Acid, begun in June, 1953, likely to be completed in January, 1955.
- S. Ramachandran (Res. Asst. I.C.M.R. Scheme) and Prof. P. S. Sarma, Studies on the Enzymic Role of Inositol & Biotin, begun in July, 1952, completed in January, 1954, published in Ind. Jour. Med., Research, **42**, p. 201, 1954.

N. R. Moudgall (Res. Asst., C.S.I.R. Scheme) and Prof. P. S. Sarma, Biochemistry of Iodoproteins, begun in January, 1952, completed in January, 1954, published in *Analyst*, 79, p. 43, 1954.

Botany

Prof. T. S. Sadasivan, Director, University Botany Laboratory :

Studies on host-parasite physiology with special reference to soil-borne Fusarioses of plants.

Application of Spectrographic methods to the study of fungal physiology.

Dr. C. V. Subramanian, Reader, Studies on Fungi Imperfecti, published in *Proc. Indian Acad. Sci. B.*

Ph. D.

Dr. K. Ramakrishnan, Senior Lecturer, (a) Soil Conditions and Fungal wilts in Plant Distribution and behaviour of fungi in soils ; (b) Studies on South Indian Ascomycetes, begun in August, 1950, completed in January, 1953, published in *Proc. Indian Acad. Sci., B.*

Dr. R. Kalyanasundaram, Soil conditions and wilt diseases in plants : Fungal wilts and changes in host metabolism, begun in July, 1951, completed in July, 1953, published in *Proc. Indian Acad. Sci., B. ; Nature (Lond.).*

G. Satyanarayana, Soil conditions and the wilt of cotton—with special reference to Host Physiology, begun in August, 1949, completed in August, 1953, published in *Proc. Indian Acad. Sci. B. ; Nature (Lond.).*

V. Agnihothrudu, Soil conditions and wilt diseases in plants : Rhizosphere microflora in relation to fungal wilts, begun in August, 1950, completed in August, 1952, published in *Proc. Indian Acad. Sci. B. ; J. Madras University, B.*

John Chinnayya, E, Soil conditions and wilt diseases in plants with special reference to *Rhizoctonia* spp. on Cotton, begun in August, 1948, completed in August, 1951.

R. Prasanna Varma, Soil conditions and wilt diseases with special reference to *Fusarium* spp. on Tomato, begun in August, 1948, completed in January, 1952, published in *J. Indian Bot., Soc.*

D. D. Varadarajan, Soil conditions and wilt of plants with special reference to Trace Element Nutrition, begun in August, 1949, completed in August, 1953.

Kumari K. Radha, Soil conditions and wilt diseases of plants with special reference to *Rhizoctonia bataticola*, begun in July, 1947, completed in January, 1952, published in *Proc. Indian Acad. Sci. B.*

Dr. K. T. Mathew, Studies on the Black Rot of Coffee, begun in August, 1949, completed in August, 1952, published in *Proc. Indian Acad. Sci. B.*

Kumari L. Saraswathi Devi, Soil conditions and wilt diseases in plants : Essentiality of Trace Elements to some soil Fungi, begun in August, 1951, likely to be completed in January, 1955.

S. Suryanarayanan, Growth Factor requirements of some Fungi, begun in August, 1951, likely to be completed in January, 1955.

K. Lakshminarayanan, Studies in Fungal Enzymes, begun in December, 1952, likely to be completed in January, 1955, published in *Proc.*

Indian Acad. Sci. B.; Nature; Archives of Biochemistry and Biophysics.

- M. Lakshmanan, Host Parasites relationships in plant wilts with special reference to respiration, begun in August, 1953, likely to be completed in August, 1956.
- D. Subramanian, Studies in the control of Fungal wilts of Plants, begun in August, 1953, likely to be completed in August, 1956.
- A. Appa Rao, Studies on blast diseases of rice, begun in August, 1953, likely to be completed in August, 1956.
- N. S. Subba Rao, Studies in the genus *Fusarium* with special reference to toxicology, begun in August, 1953, likely to be completed in August, 1956.
- C. S. Venkataraman, Studies on Fusaria of Southern Indian soils, begun in January, 1950, completed in August, 1952.

M. Sc.

- R. Muthukrishnan, The Saprophytic activity of Fusaria in Wilt-sick Soils, begun in August, 1949, completed in August, 1952.
- Kumari P. Shanta, Trace-element nutrition of Soil fungi with special reference to *Fusarium moniliforme*, begun in August, 1950, completed in August, 1953.

Economics

- Dr. R. Balakrishna, Professor of Economics :

The Measurement of Productivity in Indian Industry, begun in March, 1951, completed in September, 1953, published by the Madras University.

International Economic Relations, begun in September, 1951, completed in January, 1952, published by the Patna University.

Patterns of Economic Internationalism, published in the Souvenir of the Madras Economics Students Convention, 1952.

Productivity Comparisons in Indian Industry, published in the Indian Journal of Economics Conference No. 1953.

Petering Out of Private Industry, published in Commerce Annual Review Number, 1953.

An Appraisal of India's Five-Year Plan, published in the Madras University Journal, January, 1954 (Section A).

Under-Development, A World Economic Liability, published in the Indian Year Book of International Affairs, 1953.

Advertising Technique, published in the Souvenir of the Madras Economics Students Conventions, 1953.

- C. W. B. Zacharias, Reader :

Agricultural Planning for Madras, begun in January, 1946, completed in April, 1953, published by the Madras University.

Problems in Implementation of the Agricultural Plan in the Draft Five-Year Plan, published in the Indian Journal of Agricultural Economics, March, 1953.

Budget Making in a Planned Economy, published in the Souvenir of the Madras Economics Students Convention, 1952.

India and the International Monetary Fund and the World Bank, published in the Madras University Journal (Section A), July, 1953; January, 1954.

The Effects of the Devaluation of the Rupee on the Indian Economy, to be published in the Madras University Journal (Section A), July, 1954.

Dr. D. Bright Singh, Senior Lecturer :

Monetary Standard in India, published in the Indian Economic Journal, July, 1953.

Income-Tax as a Balancing Factor in Indian Federal Finance, published in the Indian Economic Journal, Conference No. 1953.

The Concept of Mature Economy, published in the Souvenir of the Madras Economics Students Convention, 1953.

The GATT and India, published in the Indian Year Book of International Affairs, 1954.

Finance in India, published in the Tamil Encyclopaedia, Vol. I.

Price Trends in India since 1939, to be published in two parts in the Madras University Journal (Section A).

The Problem of the Motor Transport Industry in India, sent for publication in Indian Journal of Economics (Allahabad), July, 1954.

Five-Year Plan of India, to be included in the Tamil Encyclopaedia, Vol. II.

M. Litt.

Miss V. K. Savithri, Tariff Policy in India since 1921, begun in August, 1950, completed in January, 1953.

K. N. Balakrishnan Nayar, Exchange Control in India, begun in August, 1950, completed in January, 1953.

Miss A. Vishalakshi, Economic Planning in India, begun in August, 1950, completed in January, 1953.

Madr Datta Varma, Industrial Disputes in Madras since 1940, begun in August, 1950, completed in January, 1953.

M. Rangaswami, Labour in Organised Industries in Madras, begun in August, 1951, completed in August, 1953.

Miss N. Nagalakshmi, Production and Marketing of the Principal Commercial Crops in India, begun in August, 1951, completed in January, 1954.

T. P. Subramanian, Industrial Finance in India, begun in August, 1951, completed in January, 1954.

R. Ravi Varma, Consumers' Co-operation in Madras State, begun in August, 1951, completed in January, 1954.

N. Pattabhiraman, Trade Unionism in India, begun in July, 1952, in progress.

Miss B. Meera Rao, International Economic Co-operation, begun in July, 1952, in progress.

K. V. Natarajan, Economic and Financial Condition of the Residual State of Madras, begun in August, 1953, in progress.

N. Gopalakrishnan, Sugar Industry in India, begun in August, 1953, in progress.

I. V. Ranga Rao, Land Reform Movement in India, begun in August, 1953, in progress.

Miss S. K. Cornelius, Industrial Welfare in Organized Industries in Madras State since 1940, begun in August, 1953, in progress.

Chemical Engineering

- Dr. G. S. Laddha and Sri B. Chennakesavan (Teachers), Heat Transfer of liquids through packed tubes, begun in 1953, completed in 1954.
- M. G. Subba Rau (Research Scholar), Strontium Carbonate from celestite. A pilot plant survey, begun in March, 1954, likely to be completed in March, 1955.

Ph. D.

- T. A. Poonnen (Research Fellow), Studies in Industrial Crystallisation, begun in August, 1953.
- G. Venkataraman (Research Scholar), Studies in liquid-liquid Extraction begun in January, 1954, likely to be completed in 1955.

M. Sc.

- M. G. Subba Rau (Research Scholar), Studies on Filtration, begun in January, 1952, completed in January, 1954.
- T. A. Poonnen, (Research Fellow), Flow of Sludges and suspensions, begun in July, 1950, completed in August, 1953.
- G. Venkataraman, (Research Scholar), Ternary liquid-liquid equilibria, begun in January, 1952, completed in January, 1953, under publication.
- S. Venkataraman (Teacher), Vapour liquid equilibria in ternary systems, begun in 1952, completed in 1953.
- R. S. Raman (Teacher), Size analysis of fine particles by sedimentation in centrifugal fields.

Chemical Technology

Ph. D.

- Dr. P. B. Janardhan (Teacher), Synthetics from Vegetable Oils, begun in January, 1953, likely to be completed in 1955.
- A. P. Madhavan Nair (Teacher), Investigations of the properties of South Arcot Lignite and other South Indian minerals with a view to their chemical utilization, begun in January, 1953, likely to be completed in 1955.

M. Sc.

- S. Subrahmanyam (Teacher), Investigations of the properties of South Arcot Lignite and other South Indian minerals with a view to their chemical utilization, begun in March, 1953, likely to be completed in 1955, under publication.
- B. Jagannadhaswamy (Teacher), Investigations of the properties of South Arcot Lignite and other South Indian minerals with a view to their Chemical utilization, begun in January, 1950.
- D. P. Kannayya Pillai (Teacher), Plastics from Vegetable oils.

Chemistry

- M. Santhappa, Reader in Physical Chemistry :
 Ferric azide ion-pair as a photo sensitizer in the polymerization of vinyl compounds in aqueous solution, begun in 1949, completed in 1953, published in Journal of Madras University, Section B, XXIV, No. 1, pages 91-116, 1954.

Impurities in certain photochemical systems involving radicals in aqueous solution, begun in 1949, completed in 1953, published in *Current Science*, 23, 145-47.

Polymerization of vinyl monomers in aqueous solution by radicals from photo-excited electron transfer reaction in the ion-pair $\text{Fe}^{3+} + \text{OH}^-$, begun in 1949, completed in 1953, published in *Journal of Scientific & Industrial Research* (in press).

Kinetics of reaction between chloride radicals from photo-excited ion-pair $\text{Fe}^{3+} + \text{Cl}^-$ and vinyl monomers in aqueous solution, begun in 1952, completed in 1953, published in *Journal of Madras University B XXIV*, No. 2 (in press).

Dr. K. N. Menon. (Professor), Aromatisation and Isomerisation of Bicyclic Terpenes, begun in 1953, completed in 1953, published in *Journal of the Madras University*, 1953, B XXIII, 92.

Dr. K. N. Menon (Professor), with P. S. Raman, Petroselinic Acid—Occurrence in some Umbelliferae seed fats, begun in 1951, completed in 1953, published in *Proc. Indian Academy of Science*, 1953, 38, 128.

Dr. K. N. Menon. (Professor) with P. S. Raman. Heterocyclic compounds, Part I Experiments in Isatine, begun in 1951, completed in 1953, published in *Proc. Indian Academy of Sciences*, 1953, 38, 132.

M. Sc.

M. Santhappa and V. S. Vaidyanathan, Research Student, Chain transfer reaction in addition polymerization styrene, begun in 1953, likely to be completed in 1955, published in *Current Science*, July, 1954 issue (in press).

M. R. Subbaram, Glyceride composition of the seed fat of *Cerbera Odollam* Gaertn, begun in 1951, completed in 1952, published in *Journal of the Madras University*, 1952, B XXII, 223.

Geography

Dr. George Kuriyan, Professor of Geography :
The Development of Irrigation and Hydro-Electric Power in India, since Independence, begun in 1953, work in progress.

Million Cities of India, begun in 1953, work in progress.

Dr. V. L. S. Prakasa Rao. Senior Lecturer in Geography :
Land Utilisation Survey of Cheedigummala Village, begun in 1953, work in progress.

Location of Regional Capitals with reference to Andhra, begun in 1953, work in progress.

Distribution of Population in the Andhra State, begun in 1953, work in progress.

Geology

Dr. P. R. J. Naidu, (Teacher) :

Granites and granites, Series I, begun in February, 1953, completed in December, 1953, published in the *Indian Mining Journal*, Vol. 2, No. 1, pp. 12-17.

Granites and granites, Series II, begun in April, 1954, likely to be completed in December, 1954.

Ph. D.

Leelananda Rao, (Research Fellow) :

Twins, Parallel growths parting & extinction angles in the pyroxenes of charnockites from the type area of Sir Thomas Holland, begun in October, 1953, completed in January, 1954, published in Madras University Journal, B XXIV, No. 1, pp. 53-60.

Dyke rocks of Pallavaram, begun in February, 1954, completed in April, 1954, accepted for publication in Madras University Journal, B in the August, 1954 issue.

Petrology of Pachamalai, begun in May, 1954, likely to be completed in June, 1954, to be communicated by Dr. P. R. J. Naidu to the Editor, Madras University Journal for publication in Part B, December issue.

Felspars of the Charnockites and Associated rock types of Pallavaram, begun in June, 1954, likely to be completed in July, 1954, to be communicated by Dr. P. R. J. Naidu to the Editor, Madras University Journal for publication in Part B, December issue.

Twinning in Sillimanite, begun in June, 1954, likely to be completed in July, 1954, to be published in Current Science.

S. Ramanathan, (Research Assistant) :

The plagioclase felspars from the charnockites of Salem begun in January, 1954, completed in March, 1954, accepted for publication in the Madras University Journal, B, August, 1954 issue.

A Potassic Rock from Salem, begun in April, 1954, likely to be completed in August, 1954, to be communicated.

V. M. Raghavan, (Research Student) :

Bluish-green hornblende from an amphibolite of Jalarpet, begun in January, 1954, completed in March, 1954, accepted for publication in the Madras University Journal, B in August, 1954 issue.

Felspars of granites and associated rocks of Jalarpet, begun in April, 1954, likely to be completed in August, 1954, to be communicated.

S. Kumarchandra Babu, Twinning in felspars of granites & gneisses of Mysore, begun in August, 1954, likely to be completed in January, 1955, accepted for publication in the Quarterly Journal of the Geological, Metallurgical and Mining Society of India.

Hindi

S. Shankar Raju Naidu, Head of the Department of Hindi :

Kambar and Tulsi (or Ram-Sita Poorva Raga in Ramayana), begun in April, 1952, completed in July, 1953, in press—University Publication.

Tirukkural—A Comparative Study, begun in July, 1952, completed in April, 1953, published in the "Annals of Oriental Research", University of Madras.

Treatment of Love by Tiruvalluvar and Bihari Lal, begun in July, 1953, completed in August, 1953, submitted in the 17th session of the All-India Oriental Conference, Ahmedabad.

Comparative Study of Andal and Meerabai, begun in July, 1953, likely to be completed in August, 1954, in progress.

Comparative Study of Ramayana by Tulsidas and Kambar, for Ph.D., begun in January, 1953, likely to be completed in October, 1956, in progress.

History

- Dr. T. V. Mahalingam, Reader in Indian History and Archaeology :
 South India from 1565-1803, begun in 1951, likely to be completed in April, 1956.
 South Indian Polity, begun in 1948, completed in 1951, in press.
- Dr. M. Arokiaswami, Lecturer in Indian History, History of the Kongu country, begun in 1951, completed in 1954.

M. Litt.

- S. Krishnamurthi, Land Revenue Administration in the Madras Province, begun in 1950, completed in 1954.
- K. D. Swaminathan, Chieftains of Ikkeri, begun in 1952, completed in 1954.
- A. Cherian, History of Indian Railway Policy, begun in 1950, completed in 1953.
- K. Raghavachari, Yadavas of Devagiri, begun in 1949, completed in 1953.
- G. B. T. Kuriyan, Economic background of English settlements in India in the 17th century, begun in 1952, likely to be completed in 1954.
- K. Umavaramurthi, History of Sri Sailam temple, begun in 1952, likely to be completed in 1954.
- Miss R. Champakalakshmi, Jainism in South India, begun in 1953, likely to be completed in 1955.

Ph. D.

- Miss D. Devakunjari, Madura through the Ages, begun in 1953, likely to be completed in 1955.

Indian Music

- P. Sambamoorthy, Head of the Department of Indian Music, University of Madras :
 Musical compositions of Chengalvaroya Sastri, begun in 1951, completed in 1952, published by Indian Music Publishing House, Madras-1.
- Dictionary of South Indian Music & Musicians, Vol. I, begun in 1950, completed in 1952 (the other 3 Vols. will be published by 1957), published by Indian Music Publishing House, Madras-1.
- Musical Mnemonics, begun in 1953, completed in 1953, published in the Journal of the Madras University.
- Kudimiyamalai Inscription—a new Interpretation, begun in 1953, completed in 1953, paper submitted to the All India Oriental Conference.
- Pallakki Seva Prabandham—a Telugu Opera, begun in 1953, likely to be completed in 1954 or 1955, will be published.
- Dhanur Vina—the precursor of the Violin, begun in 1953, completed in 1953.
- Great Composers and Minor Composers, begun in 1953, likely to be completed in 1954.

- Srimathi K. Annapurni, Poetic Metres and their influence on the growth of the Tala system.
- Srimathi Alamelu Govindarajan, Light thrown on the history of Indian Music by Archaeological and Epigraphical Records.
- Srimathi R. Jayalakshmi, Alankaras in Musical Compositions.
- Srimathi S. Seetha, History of Ragas and Musical forms in South Indian Music from 1600 A.D.
- Srimathi R. Sakuntala, Ritualistic Music of South Indian Temples.
- Srimathi P. N. Kausalya, Telugu Padakaras.
- Srimathi J. Annapurni, Gamakas and their growth in Carnatic music and Hindustani music.

Kannada

- M. Mariappa Bhat, Reader and Head of the Department of Kannada :
Abhinavamangabhidhana, begun in 1950, published in 1952.
History of Kannada Literature, begun in 1952, likely to be completed in 1956.
A Comparative Vocabulary of the Dravidian Languages, begun in 1948, work completed.
Kannada Dialects, begun in 1949, likely to be completed in 1957, some papers about "Tulu" published in Annals of Oriental Research, Vol. IX and X.
- M. Mariappa Bhat, with M. Govinda Rao, Junior Lecturer in Kannada :
Vardhamana Puranam, published in 1953.
Paraswanatha Puranam, begun in 1952, to be published in 1954.
- M. Govinda Rao, Junior Lecturer in Kannada :
A Thesis of Haridasa Literature in Kannada, begun in July, 1952, likely to be completed in December, 1954.
A Comparative Study of Chikupadhyaya's Vishnupurana (V Part) and Rudrabhatta's Jagannatha Vijaya, published in the Annals of Oriental Research, Vol. X, Part I.
Yakshagana in Karnataka, published in the Annals of Oriental Research, Vol. X, Part II.
- A. Shanker Kedilaya, Nagavarma I, for M.Litt. degree, begun in August, 1953, likely to be completed in December, 1954, in progress.

Malayalam

- Dr. S. Krishnan Nayar, Senior Lecturer and Head of the Department of Malayalam :
The Folk-Dance of Kerala, begun in 1952, likely to be completed in 1955.
The History of Malayalam Language, begun in 1952.
The Ballads of North Malabar, Vol. II, begun in 1952, in the Press.
- K. N. Ezhuthachan, Junior Lecturer in Malayalam :
Linguistic and Philological Studies in Mediaeval Malayalam, begun in 1953, likely to be published in 1956.
The Serpent Worship in Kerala, begun in 1953, likely to be published in 1958.

M. Litt.

- V. Appukuttan, A Study of Nalacharitam Kathakali, begun in 1953, likely to be completed in 1955.

Ph. D.

- K. Vasudevan Namboodripad, Assistant Professor of Malayalam, Presidency College, Madras and part-time Research Scholar, *An Etymological Study of the Loan Words in Malayalam*, begun in 1953, likely to be completed in 1955.
- O. K. Vasudeva Panicker, Malayalam Tutor, Presidency College, Madras and part-time Research Scholar, *The Dark Age in Malayalam Literature—A Study of the 19th Century Works*, begun in 1954, likely to be completed in 1956.

Mathematics

- Dr. V. S. Krishnan, Reader in Mathematics :
- Structure Theory of Algebras with a partial order or topology, paper on 'Closure operations on C-structure, begun in November, 1952, completed in April, 1953, published in the Proceedings Kon. Neder. Akad. v. Wet. Sec. A, 56, No. 4. (1953)
- On questions of convergence in uniform spaces. A paper on 'Uniform-convergence Spaces', begun in June, 1953, completed in August, 1953, published in Journal Madras University, Sec. B. Vol. 23, No. 2. (1953)
- 'Type' of ecart spaces and 'type' of ordered sets, begun in February, 1954, may be completed in a few months.
- Dr. M. Venkataraman, Senior Lecturer in Mathematics :
- Foundations of projective geometry, A paper on 'Non-Desarguerian Plane' abstract, begun in February, 1948, completed in December, 1952, published in Math. Student 1953.
- On continuous maps of a topological space into another, begun in June, 1952, completed in December, 1953, abstract published in Math. Student 1954.
- Chain Spaces, begun in June, 1952, completed in July, 1953.
- M. V. Subba Rao, Government of India Senior Research Fellow, Lattice product of Normed Vector Spaces, begun in July, 1951, completed in July, 1953, has been awarded the Ph.D. Degree of Madras University.
- M. S. Srinivasan, Research Scholar :
- Theory of Numbers (Representations of Numbers), A Book being written with Prof. R. Vaidyanathaswamy, begun in January, 1950, nearing completion.
- Shortest semi-regular continued fractions, begun in 1951, completed in 1952, published in the Proceedings of the Indian Academy of Sciences, 1952.
- Majors and Minors, begun in 1951, completed in 1952, sent for publication in Math. Student.
- Fifth roots of unity modulo p , begun in 1951, completed in 1952, sent for publication in Math. Student.
- Solution of $x^2 - y^2 = 1 \pmod{p}$, begun in 1951, completed in 1952, sent for publications in Math. Student.
- Dr. V. K. Balachandran, Government of India, Senior Research Scholar in Mathematics :
- On Disjunction Lattices, completed in March, 1953, published in Journal Madras University, Sec. B. Vol. 23, No. 1, pages 15-21 (1953).

A characterisation of $\Sigma \Delta$ rings of subject, completed in November, 1952, published in *Fundamenta Mathematicae* Vol. 41, (to appear).

On certain BS representations and a characterisation of complete Boolean Algebras, completed in October, 1953, published in *Pacific Journal of Mathematics* (to be published).

A Characterisation for complete Boolean Algebras, completed in May, 1954, published in *Journal Madras University, Sec. B. Vol. 24.*

On complete lattices and a problem of Birkhoff and Frink, completed in January, 1954, to be published in *Proceedings of the American Mathematical Society.*

Ph. D.

S. Swaminathan, Government of India Senior Research Scholar :

(i) Convergence Structure in Spaces ; begun in October, 1953, completed in November, 1953, Abstract sent to the 19th Conference of Indian Mathematical Society, jointly with Dr. V. S. Krishnan, and published in *Math. Student*, 1954, under the title 'on completing a Uniconvergence Space'.

(ii) Uniform Spaces, work in progress.

R. Ramachandran, Research Scholar, Banach Spaces with the projection property, begun in August, 1952, likely to be completed in August, 1955.

Persian

A. Syed Usha, Junior Lecturer in Persian, Selections from *Jawami-ul-Hikayat* by Awfi in three volumes, copying of the text completed before June, 1952, Consolidation of text, glossary, critical notes, index and introduction completed between August, 1951 and July, 1953.

Waqai-i-i-Saltanat-i-Muhammad Shah Padshah (in Persian), Text copied before, June, 1952, Text consolidated and critical notes, glossary, index, and introduction completed between July, 1953 and February, 1954.

Sawanih-i-Iardat Khan (erroneously called Badshah Nama), Text copied before June, 1952, Text consolidated and critical notes, glossary, index and introduction completed between September, 1953 and April, 1954.

Fat-h Nama-i-Mahumudshahi by Ayani, completed before June, 1952, in the Press.

Tarikh-i-Khan-i Jahani by Nimatullah Ibn Khwaja Habibullah Hiravi, begun in October, 1953, likely to be completed in April, 1955.

Muhammad Yousuf Kokan, Junior Lecturer in Urdu :

Mathnawi Naw Bahar-i-Ishq by Ghulam Aizzuddin Khan Mustaqim Jung Bahadur Nami (1767-1824), begun on 6-11-1951, completed on 30-8-1952.

Asl-ul-Usul by Abdul Qadir Mehrban Fakhri (1730-1789), begun on 1-9-1952, will be completed in August, 1953.

Philosophy

Prof. T. M. P. Mahadevan, Professor of Philosophy :

Gaudapada—a study in Early Advaita (2nd Edition, 1954), published by University of Madras, Madras.

Time and Timeless (Principal Miller Lectures, 1953), published privately.

- Sambandha Vartika, with English translation and notes, under print.
 Basis of Ethical, Social and Spiritual Values in Indian Philosophy,
 published in East-West Philosophy, University of Hawaii.
 Sri Ramakrishna, The Prophet of Inwardness, published in the Golden
 Jubilee Souvenir of Ramakrishna Mission Home of Service, Banaras.
 The Original Gita, published in Prof. M. Hiriyanna Commemoration
 Volume, Mysore.
 Can there be Ethics without Metaphysics ?, published in Proceedings of
 the 27th Indian Philosophical Congress, Mysore.
 Chapters on "The Upanishads" and "Saiva Siddhanta", published
 in History of Philosophy : Eastern and Western, by George Allen &
 Unwin & Co.
 The Spirit of Indian Philosophy, published by Osmania University,
 Hyderabad.
 Death and Deathlessness, published in Prabuddha Bharata, 1952.
 The Unesco Symposium on the Concept of Man, published in Vedanta
 Kesari.
 Philosophy in America, published in Vedanta for East and West.
 Thayumanavar, published in Kalyana Kalpataru.
 The Philosophy of Education, published in Prabuddha Bharata.
 Philosophies of India, published in Pacific Affairs, U.S.A.
 Tantric Cults, published in Prabuddha Bharata.
 Kashmir Saivism, published in Bharatiya Vidya, Volume XIII.
 Approach to Philosophy : Pleasure, published in Prabuddha Bharata.
 Western Civilization and Vedantic Culture, published in Comprendre,
 Venice, Italy.
 The Metaphysics of Sankara, published in Philosophy : East and West,
 Hawaii.

M. Litt.

- Mrs. P. V. Sulochana, Concept of Values in Indian Thought.
 E. Ittuthran Warriar, Advaita of Anandabodha.
 K. Raghunayakulu, A study of Logical Positivism.
 S. Kalyanasundaram, The Ethical Philosophy of Mahatma Gandhi.
 S. Ganesamurthi, A Critical Study of Scepticism.
 Mrs. R. Sivakumar, The Ethics of Savia-Siddhanta.
 Miss C. Madhavi Kutty, Post-Sankara Advaita.
 Miss Yeme Bai Madhavan, The Doctrine of Super-Mind in the Philosophy
 of Sri Aurobindo.

Ph. D.

- Mrs. Sarasvati Chennakesavan, The Concept of Mind in Indian Philosophy.
 A. G. Krishna Warriar, The Concept of Mukti in Advaita-Vedanta.
 Dale Riepe, American Fulbright Scholar, Indian Philosophical Naturalism.
 Solomon Levy, Principle of Causality.
 G. W. Patzig, Unesco Fellowship, Concepts of Indian Philosophy.
 W. H. Harris, American Fulbright Scholar, A study of the works of
 Ramanuja.

Physics

- Dr. G. N. Ramachandran, D.Sc., Professor :
 X-Ray Anti-reflections in Crystals, published in Proc. Ind. Acad. Sci.
 A., 1954.

Determination of Degree of Perfection of Crystals, begun in October, 1952, completed in July, 1953, published in Proc. Ind. Acad. Sci. A., 1954 ; Acta Cryst., 1953.

Stokes Parameters, begun in October, 1952, completed in June, 1953, published in Journal Madras University, 1953.

Dr. G. N. Ramachandran and Dr. Gopinath Kartha (Res. Fellow), Structure of Collagen group of Proteins, begun in July, 1953, published in Nature (under publication) ; Biophysica et Biochem Acta (under publication).

Dr. Gopinath Kartha, Research Fellow. The Space group of Morellin, begun in July, 1953, completed in June, 1954, published in Current Science, 1953 ; Current Science (under publication).

Dr. A. Ramakrishnan, Reader :

Random Points on a Line, begun in August, 1952, completed in February, 1953, published in Proc. Camb. Phil. Soc., 1953.

Fluctuating Density Field, begun in December, 1952, completed in July, 1953, published in Astrophysical Journal, 1954.

Trajectories of Stochastic variables, Stellar Statistics, begun in December, 1953.

Dr. A. Ramakrishnan and P. M. Mathews :

Ionisation Loss of fast particles, begun in March, 1954, completed in May, 1954.

Molecular distribution in one dimensional fluid, begun in September, 1953, completed in January, 1954, published in Phil. Magazine, 1954 ; Phil. Magazine (under publication).

Ph. D.

K. S. Chandrasekharan (Res. Asst.), Studies with Polarized X-Rays, begun in April 1953.

M. A. Lonappan, Res. Student, Thermal Expansion and Transition of Potassium chlorate, begun in January, 1953, likely to be completed in August, 1954.

P. M. Mathews :

Problems on Counters, begun in January, 1953, completed in April, 1953, published in Phil. Mag. 1953 ; Phil. Mag. (under publication).

Mean Square Deviation in Cosmic Ray Cascades, begun in December, 1952, completed in December, 1952, published in Prog. Theor. Phys., 1954.

M. Sc.

V. Amirthalingam, Research Student, Structure of Aspartic Acid, begun in July, 1953.

Dr. A. Ramakrishnan and P.M. Mathews, Stochastic Integro Diff. Equations, begun in October, 1952, completed in April, 1953, published in Proc. Ind. Acad. Sci., 1953.

Dr. A. Ramakrishnan and S. K. Srinivasan, Models of Cascade multiplication, begun in September, 1953, completed in February, 1954, published in Prog. Theory. Phy. (under publication).

Psychology

Dr. G. D. Boaz, Professor of Psychology, Reactions of Socially Backward people to various ameliorative measures, begun in 1953, completed in 1954.

T. E. Shanmugam, Senior Lecturer in Psychology :

Characteristics of Adolescent Girls' Fantasies, begun in 1952, completed in 1953, published in Journal of the Madras University (Science), 1952.

A Personality Inventory—Its Reliability and Validity, begun in 1951, completed in 1953, published in Journal of the Madras University (Science), 1953.

A Study of Emotional Instability in Adolescence, begun in 1951, completed in 1953, published in Journal of the Madras University (Humanities), 1953.

Characteristics of Adolescent Boys' Fantasies, begun in 1950, completed in 1953, published in Journal of the Madras University (1954) (in print).

M. Ed.

Arul Joseph, A Study of Personality Problems of some Deaf and Dumb Children, begun in 1952, completed in 1953.

K. Parthasarathy, A Study of Musical Aptitude in High School students, begun in 1953, will be completed in one year.

Elia Thambi, Measurement of Intelligence, begun in 1953, will be completed in one year.

G. F. B. Arthur, A Study of Personality Traits of residential and non-residential students, begun in 1953, will be completed in one year.

Ph. D.

Miss J. Dumas, A Study of Mother-Child Relationship, begun in 1950, completed in 1950.

Vijaya Sethumadhavan, An Assessment of opportunities for vocational education and its possibilities in the Madras State, begun in 1952, will be completed in one year.

M. Litt.

Mrs. Radhimi S. Patel, A Factual Study of Methods of bringing up children in relation to emotional problems, begun in 1954, likely to be completed in about six months.

Miss A. K. Srimathy, A Study of Inmates of the Vigilance Home, begun in 1953, will be completed in one month.

Miss K. Pushpa Lal, Incidence of Emotional Instability amongst College Women Students, begun in 1953, will be completed in one year.

K. Prabhachandran, A Measurement of Social Adjustment and Mal-adjustment in some criminals and non-criminals in Madras, begun in 1952, will be completed in one year.

Public Administration

M. Litt.

C. P. Krishnamurthi, Public Personnel Administration, begun in 1951, completed in 1954.

- Miss N. R. Visalakshi, Unions and Associations of Government Employees, begun in 1952, likely to be completed in 1955.
- Miss G. Sundari, Jail administration with special reference to women and children, begun in 1952, likely to be completed in 1954.
- Dr. K. C. Markandan (Fellow), Madras Legislature, its beginnings and early development, begun in 1952, completed in 1953.
- Miss Sarojini Devi, Welfare administration in Madras, begun in 1953, likely to be completed in 1955.
- T. A. Krishnaswami, Budget Administration in India, begun in 1953, likely to be completed in 1955.

Ph. D.

- V. Subrahmanyam, Political trends as reflected in Tamil periodicals, begun in 1953, likely to be completed in 1955.

Sanskrit

- Dr. V. Raghavan, Head of the Department of Sanskrit :

New Catalogus Catalogorum : Further work is progressing. He toured the European countries for 11 months in 1953-54 and prepared a catalogue of 20,000 uncatalogued Sanskrit manuscripts lying in the libraries of 13 European countries. This catalogue of 20,000 manuscripts in Europe will be made ready for printing in 1954.

Edition of rare works : The Nrittaratnavalli, a rare work on dance, by Jayasenapati, written in the Kakatiya court of Warangal, begun in latter part of 1952 and to be completed in 1954, published in Madras Government Oriental Series.

Lectures to be published : During his European tour he delivered the following lectures before Universities and Research Institutions and he is revising them for publication :

Comic Elements in Sanskrit Literature, delivered in Oxford University.

Ancient Indian Festivals, delivered in Kern Institute, Leiden.

Indian Aesthetics, delivered in Institute of Middle and Far East, Rome.

Treatment of Love in Kalidasa's Poems and Plays, delivered in Indian Institute of Culture, London.

Music as employed in Sanskrit Drama, delivered in Royal India, Pakistan and Ceylon Society, printed in *Arts and Letters*, of the above Society, London.

Chronological Notes, Kaiyata and Dhananjaya, published in Journal of Oriental Research, Madras.

The Tattvasamgraha Ramayana of Ramabrahmendra, published in Annals of Oriental Research, Madras University.

The Natakakalsanaratnakosa—Further corrections and emendations, paper read at All India Oriental Conference, Ahmedabad.

Kavindra Kalpalatika of Kavindracharya, published in Indica, Jubilee Volume of the Historical Research Society, Bombay.

Madhava, an old unorthodox Samkhya writer, published in Sarupa Bharati Swarup Commemoration Volume, East Punjab.

C. R. Swaminathan, Kumaradasa's Janakiharana, for M.Litt. degree.

Srimathi S. S. Janaki, Alankarasarvasva with Vidyacakravartin's commentary for M.Litt. degree.

V. Swaminathan, Bhartrahari's unpublished commentary on the Mahabhasya.

S. Subrahmanya Sastri, Junior Lecturer in Sanskrit :

Bhattadipika with Prabhavali of Sambhu Bhatta, Adhyayas 3 to 6, under print.

Vedantakaumudi of Ramadvayacharya, under print.

Atmagnanopadesavidhi of Sri Sankaracharya with Sri Anandagiri's Gloss, published in Annals of Oriental Research, Madras University.

Brahmasutra Bhashya of Sri Sankara with the commentaries Subodhini and Advaita Bhushanam (for sutras 1 to 4) ; published incomplete in the Brahmaavidya, Kumbakonam.

Bhrati of Prabhakara with Rjuvimala of Salikanatha, Padas 2 to 4 in Adhyaya I and 1st pada in Adhyaya II, edition under preparation.

Anandanubhavacharya, a paper read in Oriental Conference, 1953.

Statistics

Dr. D. V. Rajalakshman, Reader and Head of the Statistics Department :
Some Aspects of stationary stochastic processes, begun in September, 1952.

Stochastic Processes, published in Calcutta Statistical Association Bulletin, Vol. 4.

Statistical Problems in Econometric Models, published in Econometrica, Vol. 21.

Analysis of Time Series—Linear Autoregressive models for price data (jointly with M. S. Sundararajan), sent for publication to 'Sankhya'.

Statistical Study of Prices of Foodgrains, sent for publication to Madras University Journal.

Ph. D.

G. S. Lingappaiah, Lecturer, Studies in the non-parametric tests, begun in September, 1953, likely to be completed about the end of 1956.

G. Ramachandran (Senior Research Scholar, Government of India), Studies in Sequential Tests, begun in July, 1950, completed in July, 1953, a paper on Non-Parametric two-sample test, published in Journal of the Madras University, Vol. 23, Section B.

M. Sc.

O. Suryanarayana, Junior Research Scholar, Government of India :

Some Aspects of Time-Series and Rectangular Population, begun in July, 1950, completed in July, 1953.

Application of the Variate difference method to the analysis of two-time series, a paper published in Journal of Madras University, Vol. 22, Section B.

Estimation and Tests of Significance of the components of a time-series, a paper sent to 'Sankhya' for publication.

- M. S. Sundararajan, Junior Research Scholar, Government of India (Joint paper with Dr. Rajalakshman), Autoregressive Time Series and Allied Problems, begun in September, 1950, completed in September, 1953.
- P. A. George, Senior Research Scholar, Government of India, Problems in Statistical Inference, begun in April, 1952, likely to be completed in April, 1955.
- M. Madusudana Rao, Research Scholar, Stochastic Models with Time-Trending Coefficients, begun in September, 1953, likely to be published in January, 1955, a paper on the Properties of simple stochastic model with time-trending coefficients, published in Madras University Journal.
- M. Sankaran, Junior Research Scholar, Government of India, Tests to discriminate between some forms of stochastic processes, begun in October, 1953, likely to be completed in August, 1955.

Tamil

- R. P. Sethu Pillai, Professor of Tamil :
 - Words and their Significance, begun in 1948, completed in 1952, published by the University of Madras, 1952.
 - Editing of Tirukkural—Ellis' Commentary (in English), begun in 1953, completed in 1954, being printed by the University of Madras.
 - Dravidian Comparative Vocabulary (joint work of the Dravidian Departments of the University), begun in 1948, likely to be completed in 1955, being printed by the University of Madras.
 - Anandaranga Pillai's Diary—A Linguistic Study, begun in 1951, likely to be completed in 1957, work in progress.
- M. A. Dorairangaswamy, Senior Lecturer in Tamil :
 - The Religion and Philosophy of Tevaram, begun in 1950, likely to be completed in 1954, will be published in 4 vols., by the University of Madras after August, 1954.
 - The Religion and Philosophy of the Cankam Age, begun in 1950, completed in 1953, published in the Annals of Oriental Research, University of Madras.
 - The Religion and Philosophy of Cilappatikaram, begun in 1950, completed in 1953, published in the University Journal of the Madras University.
 - The Philosophy of Kalasamhara with special reference to Sundarar, begun in 1951, completed in 1952, published in the Annals of Oriental Research, University of Madras.
 - The Philosophy of Tripurantaka with special reference to Sundarar, begun in 1952, completed in 1953, published in the University Journal of the Madras University.
 - Tiruvalluvar's Conception of Salvation, begun in 1953, completed in 1953, published in the Silver Jubilee Volume of Tenkashi Tiruvalluvar Kalagam.
 - Kalattalaiyar—The significance of the Name, published in Kalaikkattir.
- B. R. Purushothama Naidu, Junior Lecturer in Tamil :
 - Tiruvaymozhi (Ittin Tamilakkam) Part I, Volumes II, III, and IV, begun in 1951, likely to be completed in 1957, being published by the University of Madras.

Tiruvaymozhi (Ittin Tamilakkam), Part I, Volume IV, work in progress.

- C. Subramaniam, Research Student, Contribution of European Scholars to the Tamil Literature, begun in 1953, likely to be completed in 1955.

M. Litt.

- T. Alagia Chockalingam, Research Student, Historic Places of the Ancient Tamilakam, (up to 10th century), begun in 1952, likely to be completed in 1954, work in progress.
- M. K. Thangavelu, Assistant Professor of Tamil, Presidency College, Madras, Pattu-p-Pattu (Ten Idylls), begun in 1952, likely to be completed in 1955, work in progress.

Dravidian Linguistics

D. Litt.

- K. Mahadeva Sastri, Government of India Research Scholar in Humanities, Historical Grammar of the Telugu Language, begun in 1954, likely to be completed in 1956, work in progress.

Ph. D.

- S. Arumuga Mudaliar, Research Fellow, Development of Tamil Literature under the later Cholas, begun in 1952, likely to be completed in 1955, work in progress.
- S. Shankar Raju Naidu, Head of the Department of Hindi, University of Madras, A Comparative Study of Kambaramayana and Tulasiramayana, begun in 1952, likely to be completed in 1956, work in progress.

Telugu

- N. Venkata Rao, Senior Lecturer in Telugu :

Selected South Indian Inscriptions in Telugu, begun in 1953, likely to be completed in 1955, published by the University of Madras, December, 1952.

Lives of the Telugu Poets from earliest times to 1250 A.D., published by the University of Madras Telugu Department Publications No. 13, 1953.

The Southern School in Telugu Literature, printing of the work completed, publication awaited.

Lives of the Poets from 1250 to 1500 A.D.

A Study of Nannaya's Language with special reference to Dravidian Philology, begun in 1953, likely to be completed in 1955.

An investigation into the grammatical and prosodical treatment of Telugu language according to Grammarians and Lakshanakaras, begun in 1953, likely to be completed in 1956.

- S. Ramakrishna Sastry, Junior Lecturer in Telugu, History of Telugu Literature from the beginning to 1350 A.D. begun in 1950, completed in 1953.
- G. V. Krishnaiah, Research Student, Literature and its value in life with special reference to Kalapurnodayamu.

Weaving

- S. Krishnamurthy, Reader in Weaving, Warp Tension & its control in weaving for Ph.D. degree, begun in 1952, likely to be completed in 1955.
- B. S. Venkatasubba Rao, Instructor in Weaving, Dependence of Air Flow and Wear on Cloth structure, for M.Sc. degree, begun in 1954, likely to be completed in 1955.

Zoology

1952

- Dr. C. P. Gnanamuthu, Director, A simple device for measuring the volume of an aquatic animal, published in Nature, London, 170 : 587-588.

M. Sc.

- Dr. G. Krishnan, Reader, On the Nephridia of Nereidae in relation to habitat, published in Proc. Nat. Inst. Sci., India, 18 : 241-255.
- S. Krishnaswamy, Lecturer :
- Some new species of copepods from Madras Coast, published in Rec. Indian Mus., 59 : 321-336.
 - A new species of Narpaticoid copepod from Madras plankton, published in J. Zool. Soc., India, 4 : 173-175.
- V. O. Sebastian, Research Assistant, A new species of synascidian from Madras, published in Curr. Sci., 21 : 316-317.
- A. Daniel :
- The respiratory mechanism of *Balanus tintinnabulum* published in J. Madras University, B. 22 : 261-267.
 - A new barnacle, *Lepas bengalensis* from Madras, published in Ann. Mag. Nat. Hist., 5 : 400-403.
- K. Ramalingam, Six new species of Trematodes belonging to the genus *Pricea* Chauhan, published in Rec. Indian Mus., 59 : 337-348.
- R. Narayanaswamy, Studies on brackish water bivalves of Madras, unpublished.
- K. Ramalingam, Trematodes of Madras, unpublished.
- S. Ramamurthy, Plankton Studies, part published.

Ph. D.

- K. Pampapathi Rao, Significance of variation in *Ptychodera flava*, published in Evolution, U.S.A., 6 : 342-343.
- V. Gopalakrishnan, Food and feeding habits of *Penaeus indicus* M. Ed., published in Journal, Madras University, B, 22 : 69-75.

1953

- Dr. C. P. Gnanamuthu, Director, Three Lernaieid copepods parasitic on South Indian fishes, published in Journal Parasitol, New York, 39 : 1-9.
- Dr. G. Krishnan, Reader, On the cuticle of the scorpion *Palamneus swamerdami*, published in Quart. J. Micres, Sci., 94 : 11-21.

M. Sc.

- S. Krishnaswamy, Lecturer :
- Pelagic copepods of the Madras Coast, published in Journal, Madras University B, 23 : 61-75.

- Pelagic copepods of the Madras Coast, published in *ibid*, 104-144.
 Pelagic copepods of the Madras Coast, published in Journal, Zool. Soc., India, 5 : 64-75.
- V. O. Sebastian, Research Assistant :
 A case of natural adaptability of *Anopheles* larvae to sea-water, published in Curr. Sci., 22 : 23.
 The development of *Herdmania pallida* (Heller), published in Proc. Indian, Acad. Sci., B., 37 : 174-187.
- A. Daniel :
 On a new barnacle *Pollicipes polymerus madraseusis* sub sp. Nov. in Madras, published in Ann. Nat. Hist., 6 : 286-287.
 Some new cirripedes from the Madras Coast, published in Journal Madras University, B, 23 : 219-226.
 The attachment of Barnacle cyprides to different types of S. Indian timber, published in *Ibid*, 23 : 226-231.
- S. Ramamurthy :
 Seasonal changes in the Hydrogenion concentrations and dissolved Oxygen content of the surface waters of the Madras Coast, published in *Ibid*, 23 : 52-60.
 Hydrobiological studies in the Madras Coastal waters, published in *Ibid*, 23 : 148-163.
 Measurement of Diatom population by pigment extraction, published in *Ibid*, 164-173.
- P. Vijayaraghavan :
 Food of the Sardines of Madras Coast, published in *Ibid*, 219-30.
 Food of the Indian Herrings, published in *Ibid*, 239-247.
- K. Ramalingam, A new genus of Trematode (*Chauhanca*) from the gills of *Sphyræna acutipinnis* Day, published in Journal Zool. Soc., India, 5 : 59-63.
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S. Krishnaswamy, Lecturer :

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A. Daniel :

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Miss Ruby Abraham, Studies on the sinus gland of crustacea, begun in July, 1952, likely to be completed in August, 1954.

Mrs. V. Thomas, Study of the anatomy and development of *Dasychone*, begun in July, 1953, likely to be completed in August, 1955.

- M. D. K. Kuttalingam, Feeding habits of fishes, begun in July, 1953, likely to be completed in August, 1955.
- Antony Raja, Studies on the development and growth of some Marine sedentary organisms, begun in July, 1953, likely to be completed in August, 1955.
- Raju Kurian, Plankton Studies, begun in July, 1953, likely to be completed in August, 1955.
- S. Shanmughasundaram, Endocrines of fishes, begun in July, 1953, likely to be completed in August, 1955.

M Y S O R E

Maharaja's College

ARTS

English

Professor C. D. Narasimhaiah :

Indian writers of English, a paper published in "The Literary Criterion" edited by C. D. Narasimhaiah.

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Professor M. E. Bharathraj Singh, History of the Theatre.

C. D. Govinda Rao, English Novelists and Education.

N. Balasubrahmanyam, Semantics.

H. H. Anniah Gowda, Influence of English literature on Kannada.

Economics

Dr. M. H. Gopal, Indian Taxation.

Dr. G. Ramakrishna Reddy, Financial relations between the Centre and Part "B" State.

A. P. Sreenivasamurthy, Spending money on economic or an ethical problem.

Nanjundappa, The Economics of Public Enterprise in India.

Subbaramaiah, Economic Policy and Full employment in India.

Hindi

N. Nagappa, The Indo-Aryan and the Dravidian—Probable influence of the Dravidian Languages on the Indo-Aryan Languages.

M. Davegowda, A comparative study of modern Kannada and Hindi Literature.

M. Rajeshwariah, A comparative study of the Nirgama Bhakti Dhara in Kannada and Hindi.

History

Dr. M. V. Krishna Rao :

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Liberalism, issued in 1953 by the Kautilya Mandali, Mysore.

Kautilya, issued in 1953 by the Kautilya Mandali, Mysore.

Praja Sarkara.

Asoka's idea of Government.

Dr. S. Srikanta Sastri, Bharatiya Samskriti, issued in 1954 by the Oriental Research Institute, Mysore.

- D. S. Achuta Rao :
 Haider Ali.
 Vishnuvardhana Hoysala.
 British Constitutional Development.
 Administration of Mysore under H. H. Sri Chamaraja Wadiyar :
 1881-1894.
- A. V. Venkatarathnam, Neutrality of the English during the Mysore-Maratha War of 1786.
- B. Sheik Ali, Factors that contributed to the speedy conclusion of the treaty of Srirangapattana in 1792.

Indology

Professor K. A. Nilakanta Sastry :

Age of the Nanda Mauryas—Contributed many chapters to this book, besides editing the whole volume. It has been published for the Bharatiya Itihas Parishad by Messrs. Motilal Banarsi Das, Benares. A History of South India, published by the Oxford University Press. The Cholas. A revised edition of this work has been published by the University of Madras.

Is revising for a second edition his book on Historical method in relation to problems of South Indian History.

Indian Expansion in Central Asia, in progress.

Has written many chapters to A Comprehensive History of India, Vol. II which he is also editing. This is sponsored by the Indian History Congress cum the Bharatiya Itihas Parishad.

Satiya Puta, published in Journal of the Bombay Branch of the Royal Asiatic Society.

Kannada Poets, published in Sir Jadunath Commemoration Volume.

History of the Tamils, published in Indian Express, Special Number.

Marco Polo on India, published in Marco Polo Centenary Volume.

Vijayabahu, the Liberator of Lanka, published in Journal of the Royal Asiatic Society of Ceylon.

Kautilya on Royal Authority, published in Indian Historical Quarterly.

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Dr. M. Seshadri :

Prehistoric and Protohistoric.

Mysore : A study of Stone Age.

Journalism

Nadiga Krishna Murthy, History of Kannada Journalism.

Kannada

T. S. Shama Rao, Development of Kannada Drama.

Smt. S. Ratnamma, Kumara Vyasa.

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Linguistic studies of Kannada Inscriptions of the 11th and 12th Centuries.

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The Kannada Lyrics.

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Kannada Poetics.

Philosophy

V. Muddalinganna, Gerontology (Science of Old Age).

Smt. Nanjamanni, Institutional Crisis and the Problems of adjustment.

Dr. K. N. Venkatarayappa, Socio-Ecological Survey of Bangalore.

Political Science

G. S. Halappa, The Changing Map of India.

Dr. K. B. Y. Thotappa :

Trends in Modern Federalism.

United Nations and Specialised Agencies.

H. Mallaiaya, The City Government in Mysore State.

Psychology

Dr. B. Kuppuswami :

Attitude towards Marriage and Divorce.

Achievement Tests for High Schools.

Intelligence Tests for High Schools.

Smt. Maya V. Bose, Measurement of Personality.

T. Hussain Ali Khan, Interests among High School Students.

H. D. Vasantharajiah, Temperament and Social Distance.

L. Narayana Rao, Individual Test of Intelligence.

Abdul Hafeez, Values Test and Acendence—Submission Test.

P. Krishna Murthy, Measurement of Personality.

B. Krishnan, Temperament and Profession.

M. Yoganarasimhiah, Clerical Aptitude and General Intelligence.

M. N. Kamala, Radicalism—Conservatism Attitude Test.

Sanskrit, Pali, Prakrit

Dr. H. L. Hariyappa :

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G. Marulasiddiah, Realism in Sanskrit.

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Professor S. K. Ekambaram :

Quality Control Manual for Textile Technicians.

The Experimental Applications of Statistical Methods in Indian Industries.

Statistical Methodology.

Statistics and Quality Control.

S. Q. C. and Food Industries.

M. R. Doraiswami Iyengar, The Economics of Personal Distribution.

M. V. Jambunatham :

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The Intra Class Correlation Coefficient.

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Central College, Bangalore

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O. K. Nambiar, has published a book on the history of Indo-Portuguese relations in the 16th Century bearing the title "Portuguese Pirates and Indian Seamen" and incorporating considerable original material (Pages 216, illustrated), published by M. Bhaktavatsala, B.A., 8, Langford Road, Bangalore.

Geology

Physical, Chemical and Optical study of the amphiboles and pyroxenes and other minerals found in Mysore.

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- K. V. Krishna Iyengar and Srimathi C. Dhanalakshmi, Senior Res. Scholars, Government of India, Nuclear Research emulsion plates and cosmic rays, begun in February, 1954.
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- The development of chondrocranium in *Ophicephalus punotnitatus* (Bloch), published in J. Linn. Soc. Zool., 1952.
- The Chondrocranium in the Viper, published in Ant. Anzei., in Press.
- The Osteology of Cat fishes, published in Curr. Sci., 1955.
- The development of Chondrocranium and Osteocranium in some families of cat fishes (In progress).

M. R. Narsimha Prasad :

- Male genital tract of two genera of Indian Squirrels, published in Journal of Mammalogy, begun in November, 1954.
- Natural history of the South Indian gerbille *Tatera indica* Cuvieri, published in Journal Bombay Nat. Hist. Soc., Vol. 52, 54.
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- The early development and morphogenesis of foetal membranes in the gerbille *Tatera indica* Cuvieri (In preparation).

M. Appaswamy Rao :

- Alkaline Phosphatase and periodic Acid-schiff Reactions in the thymus of *Calotes versicolor* (Daud), published in P. N. I. S., Vol. XX, 4, 54. .
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Ayurveda

Veni Madhav Shastri Joshi, (i) Trina Jyoti, (ii) Mercury, begun in July, 1953.

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G. S. College of Commerce & Economics, Nagpur

Commerce

Ph. D.

- Prof. G. P. Gupta, The Reserve Bank of India & Monetary Management, begun in January, 1954 (The thesis would be submitted to Agra University).
- Prof. O. P. Bajpai, Social Insurance planning in India, begun in February, 1953. (The thesis would be submitted to Agra University).
- Prof. M. A. Chansarkar, Social Insurance for our workers in Industry, begun on 26th January, 1954.

- D. M. Munshi, "Bhoodan"—The movement of Land Gift, begun on 1st July, 1954.
- Prof. C. L. Malpani, Labour in Madhya Bharat Textiles, begun on 5th December, 1953, for Ph.D. (Economics).

University Training College

Education

M. Ed.

- Bhide, N.M., The Educational and Sociological significance of the Vedic Samskaras, begun in July, 1951.
- Dakshindas, R. V., An investigation into the antisocial behaviour of school children, begun before 1950.
- Deokar, J. N., Spelling Test in English for Classes X and XI of High Schools in Nagpur, begun in July, 1952.
- Ekbote, T. B., Financing of secondary education in Madhya Pradesh, begun in July, 1951.
- Shrimati Hazarnavis, U., An observational study of social and emotional life of children between the ages 3 to 6, begun in July, 1951.
- Jape, R. V., An Investigation into the attainments in Arithmetic and language of the pupils of Primary standard, following the different syllabi, begun in July, 1952.
- Shrimati Kharvandikar, S. V., Reading Interests of Secondary School children in Nagpur, begun in July, 1952.
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- Kumari Pavri, Dina, M., Attitude of school children towards punishment, begun in July, 1951.
- Puranik, G. A., A study of the Extra Curricular Activities of the secondary schools in Nagpur, begun in August, 1951.
- Richharia, P. R., Home environment as a factor in scholastic attainment, begun in July, 1951.
- Sole, V. P., Relation between physical efficiency and scholastic attainments among the school boys of the age group 12 to 16 years, begun in July, 1952.
- Tak, K. G., A Study of friendship and quarrels among children, their nature and factors contributing to them, begun in July, 1951.
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- India after Seven Years Abroad, published in Mysindia-Bangalore, May-June, 1953.
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- Prof. A. Sen, Kautilya and Confucius—A Political Reverie, published in Bulletin of Political Science Association, Nagpur University, Nagpur, May, 1953.
- Dr. M. P. Buradkar :
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- S. G. Kashikar :
- A Reflection on the World Crisis, published in Bulletin of the Political Science Association, Nagpur University, Nagpur, May, 1953.
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- Shrimati Aparna Bajpai, India's Role in Korea, published in Bulletin of the Political Science Association, Nagpur University, Nagpur, April, 1954.

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- P. S. Dhagat, Organisation of Group Life through the Co-operative Movement.
- Kumari K. M. Vaidya, International Labour Organisation in Relation to India.
- S. C. Gangul, The Gandhian Way to World Peace.
- T. G. Pande, Political Thought and Theory in Mahabharata.
- D. T. Deshpande, The Influence of the British Rule on the Evolution of Political Thought in India.
- S. Nagappa, Fundamental Rights in the Indian Constitution.
- S. G. Kashikar, The Conditions of Indians Abroad.
- J. V. Devraj, Evolution of Efforts at Peace-Making in the 20th century.
- P. J. Jagirdar, Social, Political and Economic Ideals of Mahadeo Govind Ranade.

- Kumari S. N. Bhuskute, Political and Social Ideas of Lokmanya B. G. Tilak.
 G. J. Agarwal, Origin and growth of Political Parties in India.
 S. D. N. Tiwari, The Right of Resistance in the Neo-Hegelian School of Political Philosophy of England.
 Sunderlal Rai, Social and Political Thought of Swami Dayanand Saraswati.
 Rabindra Chandra Dey, Indian Democracy and the Organisation of Political Parties.
 P. K. Majumdar, Evolution of Social and Political Thought in India since 1900 A.D.
 D. P. Varma, The Making of the Indian Constitution.

Public Administration and Local Self-Government

Ph. D.

- Mrs. A. Prabhavati, Government Corporations in India, begun in August, 1952.
 S. Ramanathan, Organisation and work of the Administrative Departments of the Government of Madhya Pradesh, begun in August, 1952.

College of Science, Nagpur

Chemistry

Dr. K. Krishnamurti :

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Changes in surface tension of a medium during bacterial growth, paper published in "Research", London, February, 1954.

A new Adsorption Isotherm, paper published in "Research", London, April, 1954.

A new principle of Chemical reaction, paper published in "Research", London, April, 1954.

Dr. A. N. Kappanna :

A. C. Electrolysis, Part I, paper published in J.I.C.S., 1952.

A. C. Electrolysis, Part II, paper published in J.I.C.S., 1952.

Further work on Auodic oxidation of formate-ion, paper published in J.I.C.S., 1953.

E. R. Talaty, Electrochemistry of Fluoride solutions, Part III, paper published in J.I.C.S., 1952.

K. M. Joshi, A. C. Electrolysis, Part III, paper published in J.I.C.S., 1954.

Mathematics

Dr. S. S. Shrikhande :

On the dual of some balanced incomplete block designs, paper published in "Niometrics", pp. 66-72, 1952.

The non-existence of certain affine resolved Balanced incomplete block designs, paper published in Canadian Journal of Mathematics, pp. 413-420, 1953.

A note on incomplete block designs with row balance (jointly with Hartley and Taylor), paper published in Annals of Mathematical Statistics, pp. 123-26, 1953.

On the construction of group divisible incomplete block designs (jointly with Bose and Bhattacharya), paper published in Annals of Mathematical Statistics, pp. 167-195, 1953.

Cyclic solutions of symmetrical group admissible designs, paper published in Calcutta Statistical Association Bulletin, Vol. 5, Number 17 (1953).

Laxminarayan Institute of Technology

Dr. P. S. Mene and G. Narasimhan :

Mechanism of the rectification of Binary Mixtures, published in Trans. Ind. Chem. Engrs., 1952-53.

Determination of water in Amyl Alcohol by a modified conductance method, published in Trans. Ind. Inst. of Chem. Engrs., 1952.

Dr. T. N. Mehta :

Urea Adducts—Part I, published in J. Ind. Chem. Soc. Ind. Ed., 1952.

Sulphation of Fatty Acids—Part I, published in J. Ind. Chem. Soc. Ind. Ed., 1952.

G. Narasimhan :

On the Dependence of the average Polymer weight on the change in the particle diameter of a homogenous emulsion, published in J. Physical Chem. (U.S.A.) April, 1952.

On the mechanism of Viscosity of Polymer solutions, published in J.S.I.R., May, 1952.

U. R. Warhadpande and V. R. Sohoni, System Ethyl acetate—AcOH—Water, published in Ind. Eng. Chem. Jour., 1952.

S. B. Pandya (work guided by Dr. P. S. Mene), Study of Madhya Pradesh Coals with special reference to their Beneficiation and Caking Properties for M.Sc. (Tech.), Thesis published by Nagpur University.

Dr. P. S. Mene, Applications of Fluid Flow Equations through packed columns, paper read before the Annual meeting of the Indian Institute of Chemical Engineers, Hyderabad (Dn.).

Dr. T. N. Mehta, C. V. N. Rao and B. Y. Rao, Sulphation of Fatty Acids—Part II—Comparative rates of Sulphation of Castor Oil, its fatty acids oleyl alcohol and oleic acid, published in J. Ind. Chem. Soc. (Ind. and News. Ed.), 1953, 16, 81.

Dr. T. N. Metha, Synthetic Detergents, published in Indian Soap Journal, 1953, 19, 34, 1954, 19, 176, 204.

Dr. T. N. Metha, C. V. N. Rao and V. Laxmikanthan, Chemical Examination of the Oil-seeds (Ber), published in Indian Soap Journal, Vol. 19, p. 94, October, 1953.

Diploma Training Institute for Men, Amravati

M. Ed.

- V. M. Veni, Construction of A new General Science Syllabus for High Schools in M. P., begun in August, 1952, completed in March, 1953.
- M. M. Shukla, An experimental Study of the pupil-teachers in Diploma Training Institutes in Madhya Pradesh to find out (i) Their professional interests and, (ii) Personality Requirements, begun in August, 1953, to be submitted on 30th April, 1955.

Vidarba Mahavidyalaya, Amravati

- P. S. Telang, 'Tipu Saheb', (the forgotten martyr of India), begun on July, 1952.
- D. Y. Deshpande, Problem of Time, for Ph.D., begun in 1943.
- Dr. V. R. Deoras,
 Govinda III—A forgotten emperor of Madhya Pradesh.
 Some Kings of Maharashtra from the Satavahanas to the early Chalukyas.
 New Light on the Early History of Yadavas of Devagiri, 1953-54, published in the Silver Jubilee Volume of the Indian Historical Research Inst., Bombay University, in December, 1953.
- E. N. Das, Acanthocephalan parasites and their life-histories, for Ph.D. or D.Sc. ; the work in this problem was started in January, 1948. The published work has been incorporated in the Zoological Records of London. The reprints are fully in demand by scientists abroad.
- B. R. Deoras, Electrodeposition of Zinc and Cadmium from formate solutions, begun in the Summer of 1951.

OSMANIA

College of Arts & Commerce

Arabic

Ph. D.

- M. A. Sattar Khan, A critical edition of Ibnul Qifit's Anthology of Arat poets—Kitab-ul-Muhammaddin, begun in July, 1952.
S. Abul Fazl, A critical edition of the Diwan of Ibu Hajar Al Asqalani, begun in July, 1952.

Economics

Ph. D.

- Balwant Reddy, Monetary theory in an under-developed Economy, begun in 1952-53.
Naimuddin, Recent trends in India's Foreign trade, begun in 1953-54.
M. K. Subramanyam, Unemployment in under-developed Economics, begun in 1953-54.
Miss M. F. Jassawala, Problem of Industrial Finance in Hyderabad, begun in 1952-53.
Jagan Mohan Rao, Problems of Industrial labour in Hyderabad Deccan—A critical study of the Industrial disputes in Hyderabad and the labour problem in the State, begun in 1952-53.

English

Ph. D.

- S. Jembunathan, Poetic imagery of Shelley, begun in 1952-53.
M. S. Samuel, Spenser's influence on Milton, begun in 1952-53.

Hindi

Ph. D.

- P. Vidyasagar, Chitra Kavya in Hindi Poetry, begun in 1952-53.
Mrs. T. D. Singh, Abdur Rahim Khan Khana and his Hindi Poetry, begun in 1953-54.

History

Ph. D.

- K. R. James, Social and Cultural History of the Sangama Dynasty, begun in 1952-53 ; the subject has a bearing on Vijayanagar dynasty.
Rasheeduddin Khan, Political and cultural aspects of the National Movement in India in the Twentieth century, begun in 1952-53.

Kannada

- Ramchander Rao Patwari, A comparative study of Vyasa Bharata and Kumara Vyasa Bharata in Kannada.

Marathi

Ph. D.

- S. R. Kulkarni, The Bagwath Dharma as propagated by Eknath, begun in 1952-53.
 (a) Bhagwat Dharma—Its development from Vedic period.
 (b) Development of man—Main feature of Bhagwat Dharma.
 (c) Development of Society—Salient features of Bhagwat Dharma.
 (d) Comparative study of Bhakti cult in other provinces of India.
 (e) Eknatha's contribution to the Bhagwat Dharma.
 (f) Modern Development & Bhagwat Dharma.
 B. Khalekar, Rukmini Katha, begun in 1953-54, (Second term)—There are two different trends in Rukmini Katha (a) (i) Mahabhavas, (ii) Bhagawatas, (b) (i) Pandits (scholars), (ii) Bhaktas (devotees).

Persian

- Miss Sharifunnisa Begum, A critical study of the life and works of Abu Thalib Kalim Hamadani (1652 A.D.), for Ph.D., begun in 1952-53.

Philosophy

Ph. D.

- Miss Razia Ali Fazil, Kant's theory of Moral obligation, begun in 1952-53.
 B. Venkat Kishan, The conception of salvation in the Philosophy of Schopenhauer, begun in 1953-54.
 Md. Ismail, Reason and Authority in Hindu Philosophy, begun in 1953-54.

Political Science

Ph. D.

- Shafiqul Hasan Hashimi, The development of Political thought in the early Seljuk period, begun in 1952-53.
 Mrs. Mumtaz Habeeb Mahagir, A critical study in the new trends in the concept of sovereignty, begun in 1953-54.

Sanskrit

- Khande Rao Deshpande, A comparative study of Valmiki's Ramayan and Kalidasa's work.

Sociology

Ph. D.

- Miss Fatima Begum, Social Philosophy of Poet Hali, begun in 1953-54.
 Maslehuddin Siddiqui, Social & Cultural effects of the Aligarh movement.
 Purushottana Sirsalkar, Some aspects of the tribal culture of Hyderabad.
 Tuljah Ram, The Madigas—A socio-economic study.
 R. Prakash Rao, The Lambadas—Their Social Organisation.

Telugu

Ph. D.

- B. Rama Raju, Folk Songs in Telugu, begun in 1952-53.
 D. Venkatavadhani, The beginnings of Telugu Literature with special reference to Nannaya Bharata, begun in 1953-54.

Urdu**Ph. D.**

- Khaja Hameeduddin Shahid, Urdu Masnavi up to 1800, begun in 1953-54.
 Miss Rafia Sultana Begum, Development of Urdu prose before the Fort William College, begun in 1950, thesis completed.
 Mohd. Bin Omer, Etymology of English words in Urdu, begun in 1950.
 Ghulam Omer Khan, Iqbal's conception of the superman, begun in 1950, has completed the work.

Women's College**Economics**

- Smt. Shahenshah Begum, Land Reforms in India.

Hindi

- Mrs. Roop Karan, Humour and satire in Hindi Poetry.

History

- Mrs. Luke, Early Deccan Polity up to 1400 A.D.

Marathi

- Dr. Kelkar, Criticism of Marathi Novels and drama of Shri Dighe and Shri Davel.

Persian

- Miss Razia Begum, The National and humanistic element in Shahnama, work in progress.

Sanskrit

- Mrs. G. Burn Appalswamy, Treatment of Nature in classical Sanskrit Poetry.
 Miss B. K. Rukminiamma, Concept of Rasas in Sanskrit Literature.

Urdu

- Smt. Zenath Sajida Begum, Early Urdu Romances, for Ph.D., The work and life of Ghawasi, a great poet and romance writer of Golconda—Tutti-hama and Phoolban—old romances. Qutub Shahi period completed.

Evening College, Secunderabad**History**

- Miss S. Regani, The Nizam's British relations during the period 1724-1936.
 S. Natarajan, The rule of Law and Indian Administration.

Nizam College**Economics**

- M. Prasad Rao, Cottage Industries in Hyderabad, with special reference to the place of cottage industries in the economy of Hyderabad State (for Ph.D.).

English

H. B. Kulkarni, Element of destiny in contemporary British drama.

History

R. Narasimha Rao, Life in Medieval Andhra.

Dr. M. Rama Rao, Satduchana Coins, examined about 50,000 coins of the Satavahanas and their feudatories and contemporaries.

Kannada

F. C. Mathad, Veerasrinivasan and Karnatak culture.

V. Pondurangacharya, Jaimini Bharata in Kannada and Sanskrit.

Marathi

R. M. Bhusari, The social conditions of Maharashtra during the 13th century as depicted in the Marathi literature.

Persian

Ghulam Dastagir Rasheed, Eulogistic poetry in Persian—The Naib poetry of Rumi, for Ph.D.

Sanskrit

A. Sitarama Rao, Raja Yoga, with special requirements Pramavidya and Mandridya.

B. R. Sastry, Dandi and his works and place in Sanskrit Literature—A critical study of Dasakumaracharita.

Hindi

Raj Kishore Pandey, Early Dakhini Prose, critical study of Dakhini dialect and its prose, for Ph.D.

Tamil

P. M. Sundaram, Bharathi, his life, work and poetry.

Telugu

M. Venkatacharyulu, The Life of Ashwa Gosha.

University College of Science

Botany

Prof. M. Sayeeduddin, Taxonomy, Ecology and Anatomy of Angiosperms. Flora of Hyderabad is being written. Work is in progress.

Dr. M. Abdus Salam, Survey of Fungus Flora of Hyderabad ; One paper published. Three papers have been communicated and accepted for publication to the Journal of Indian Botanical Society, Work is in progress.

Dr. M. R. Saxena, Systematics and Ecology of Freshwater Algae and Flagellates, Algal flora of Hyderabad State is being written. Work is in progress.

P. Ramachar, Studies in Uredinicolus Fungi, One paper published. Work is in progress.

Ph. D.

- P. N. Rao, Paddy diseases of Hyderabad, Pathogenicity and Physiologic races of *Piricularia oryzae* (Paddy Blast is being carried out and the work is in progress).
- A. R. Zafar, Ecology of Freshwater Algae, work is in progress.
- N. Ramiah, Anatomy and embryology of some of the Compositae—Anatomy and Embryology of some of the members of the Heliantheae (Compositae), in progress.
- Miss Qamar Siddiqui, Weeds of Adigment and their root systems with particular reference to edaphic factors, work is in progress.
- Miss Kamala, D., Embryological studies in certain families of angiosperms, work is in progress.
- K. V. N. Rao, Metabolism of Algae with special reference to trace elements, work is in progress.
- V. G. Bilolikar, Ecology of Soil Algae, Chemical analysis of typical soils have been studied—Algal flora of different soils with reference to Chemical constituent will soon be begun, work is in progress.
- Narsing Rao, Ecology and Physiology of weeds—Studies in the ecological and physiological aspects of some of the weeds in cultures, in progress.
- Shrimati V. Radha, Oxidation by bacterial species and Mutations in mould fungi, work is in progress.

Chemistry

Dr. N. V. Subba Rao :

Chemical investigation of plant insecticides, *Tephrosia* and *Mundulea* species. A paper entitled 'Chemical components of Leguminous plant insecticides occurring in India' was published in Journal of Scientific & Industrial Research, 1954.

Search for new synthetics insecticides and fungicides : (i) substituted naphthaquinones. (ii) substituted benzopyrans. (iii) Organo-mercurials. (iv) substituted Phenothiazines. (v) Derivatives of s-tria-zines.

Search for new synthetic bactericides : Derivatives of hydroxy and thiol benzoic acids.

Use of mercuric acetate as an oxidizing agent.

Dr. S. Shah Mohammad :

Photobromination of hydrocarbons in the liquid phase.

Photolysis of cuprammonium salts.

Dissociation constants of Organic Bases.

Kinetics of thermal Decarboxylation. Techniques have been developed and work is in progress.

Dr. V. R. Srinivasan :

Determination of Hydroxylamine using 8-hydroxy quinoline. A method has been developed for the quantitative estimation of hydroxylamine using 8-hydroxy quinoline.

Studies on sugar cane Bagasse. A proximate analysis of sugar cane bagasse and its water absorption—desorption capacities have been investigated.

Studies on Ground-nut shells. A proximate analysis of ground-nut shells with special reference to the lignin and hemicellulose fractions has been carried out.

Studies on Essential oils. The essential oils from the flowers of *Milingtonia hortensis* and *sphaeranthus indica* are being studied.

J. Joga Rao, Photosensitized reactions. Electronic emission from photographic compounds. Photochemical decomposition of ammonium oxalate is under study with various sensitizers.

Ph. D.

V. S. Subrahmanyam, Studies on complex formation, determination and deposition of cobalt and nickel, work completed and thesis submitted.

K. Babu Rao, Search for new synthetic insecticides and fungicides : substituted Naphthoquinones.

Miss Badar Zahoor, Use of mercuric acetate as an oxidizing agent.

Rajeswar Rao, Search for new synthetic bactericides : 3 : 5 diiodo 4-hydroxy benzoic acid was prepared in good yield by direct iodination and a note on this was published in the Journal of Scientific and Industrial Research, 1953. (ii) Preparation of substituted hydroxy and thiol benzoic acids has been made and the synthesis of substituted dihydroxy benzoic acids is in progress. Commenced work in July, 1952.

Miss Aziz Siddiqui, Chemical Kinetics of thermal decarboxylation of benzoic acid and chloro benzoic acids. The thermal decarboxylation of benzoic acid in different solvents and at different temperatures has been completed.

V. Sundara Murthy, Search for new synthetic insecticides and fungicides. (ii) substituted Benzopyrones. Preliminary investigations on the methods of synthesis of substituted coumarins (especially Halogen, nitro and amino substituted) were completed and synthesis of a few substituted coumarins and chromones is in progress. Commenced work in July, 1953.

B. Radhakrishna Murthy, Fractionation of the Hemicelluloses of Ground-nut shells. Chemical analysis of the ground-nuts was completed.

Khalil Ahmed, Search for new synthetic insecticides and fungicides.

Geology

Capt. S. M. Ahmeduddin, Determination of Elastic properties of certain rocks of Hyderabad State and their correlation with their structural Petrology.

S. Balakrishna, Physical Properties of rocks in relation to certain geological phenomena are being studied.

Mathematics

Dr. V. P. Venkatachari, Elasticity—Torsion and flexure problems of composite beams.

Dr. B. Viswanatham, Non-linear Differential equations—Study of periodic solutions of non-linear differential equations.

Raghavender Rao, Theory of numbers, To find a sixth power which is sum of six sixth powers. (Euler's conjecture). A note on Euler's conjecture on sum of equal powers.

Ph. D.

J. Ramakanth, Elasticity Composite beams.

Mahfooz Ali Siddiqui, Finite Deformation (Elasticity).

Khaja Bahauddin, Application of singular integral equations to the problems of elasticity.

Physics

Dr. R. Satyanarayana, Spectroscopy—Studies are being carried on the Spectra of Ionized atoms with special reference to astrophysical applications.

Dr. K. Srinivasa Iyengar, Photoelasticity—The variation of photo-elastic constants of cubic crystals and optical glasses with wave-length of light was studied by the ultrasonic technique.

V. T. Deshpande, X-rays measurement of thermal expansion.

Dr. P. G. Puranik, Raman effect—The Raman Effect in some liquid mixtures was studied. In these mixtures of ketones, aldehydes and esters, besides the well-known displacement of the C=O lines of the carbonyl compounds in some solvents, lines associated with linkages other than C=O were found to be displaced, invariably in the opposite direction.

K. Ramavaram, Photo-elasticity by Ultrasonic method.

Dr. K. V. Krishna Rao, Photo-elastic effect in crystals—Bhagavantam (1942) obtained, by the application of group theoretical methods, a scheme of photo-elastic constants for various crystals different from the scheme of Pockels obtained by applying the classical methods. These new results have been verified experimentally in the case of the cubic crystals.

Dr. V. V. Varadaiah, High Polymer Solutions—Polyvinyl acetate solutions have been studied, by light scattering and viscosity methods.

Ph. D.

A. Satyanarayan Murty, Cosmic Rays, Commenced work in 1954.

B. V. Ranga Rao, Physical Constants of Crystals, Left for U.K. for Higher Studies.

M. Krishnamurthy, Ultrasonics—Ultrasonic propagation in liquid mixtures and solutions is being studied. Has recently submitted his thesis.

S. V. Subramanyam, Ultrasonics—Temperature variation of elastic moduli of single crystal and polycrystalline aggregates are being investigated. Has recently submitted his thesis.

Miss V. Kalpaga, Photo-elasticity, Commenced work in 1954.

Nizam College**Botany**

U. B. Sachidananda Swami, Chromosome No. of Hyderabad Grasses.

Chemistry

Dr. Syed Husain, is guiding a student of Ph.D. in searches on electro deposition and electroanalysis of metals.

Krishna Raj Mathur, Preparation of Organo-Cadmium Compounds.

V. D. Thatte, Oxidation of Organic acids by Pot. permanganate. Work is being done in the spare time.

Physics

- S. Venkataraman, Oscillations of viscous liquids in Tubes and the Criterion of Stream Line Motion and Null method for the determination of the surface tension of liquids and the use of a torsion balance. Paper communicated for publication.
- Dr. N. Rajeswar Rao, Electrolytic Dissviation in strong Electrolysis by Raman Effect. Electrolytic-Dissviation in strong electrolytis can be determined and studied accurately by studying Raman Spectra of these electrolytic.

PANJAB

1952

Agriculture

M. Sc.

- Ranjit Singh Bains, The effect of the 2nd World War on the rural economy of some selected villages in the Panjab.
- Baljit Singh Gill, Studies on the variability in important Economic and Botanical characters in Sesamum (*Sesamum indicum* L.).
- Lachhman Das Shama, Classification and inheritance studies in Panjab Tobacco.
- Ram Saran Das Vasudeva, Study of Hybrid Virgun. in Tobacco and its commercial utilization.
- Bhim Sain Gulati, To study the effect of some Agronomic Factors on the fodder and seed field of rapaso.
- Puran Chandra Batra, Response of Lucerne to various agronomic factors for production of forage and seed.
- Nand Singh, Agrobiological studies on potato and wheat crops.
- Kuldip Singh Lobana, Studies on the potentialities of exotic barleys as breeding material for the improvement of Panjab Barleys.
- Nirmal Singh Mani, Study of suitability of some newly evolved Panjab wheats for cultivation under different agronomic conditions.
- Suba Singh Rana, Correlation studies in arboreum cotton crosses.
- Gurmel Singh Sidhu, Production and marketing of wheat and barley bhusa in the Panjab (I) with special reference to Ludhiana.
- Ujagar Singh Kang, Classification and flowering studies of Arum Colocasia (*Colocasia Antiquotum*).
- Mohinder Singh Mann, Economics of size of Agricultural Holding in Gurgaon Distt.
- Bir Singh Dhillon, The Persistent Toxicity studies of D.D.T. and B.H.C. against insect pests of stored grains in different storage receptacles used in the Panjab.
- Gurbaksh Singh, Effect of different moisture levels on plant growth and transpiration of wheat.
- Parduman Singh Bedi, Studies on the wilt of Linseed in the Panjab.
- Mohinder Singh, Trial of Toxaphene and B.H.C. against important insect pests in the Panjab.
- Gurnam Singh Hundal, Residual effect of D.D.T. under field conditions against *Epilachna* and *Urentius sentis*.
- Manmohan Singh Bajwa, The study of the effect of N.P. and certain seed treatments on growth of yield and quality of wheat.
- Gursarn Singh Bajwa, Effect of defoliation or injury to the leaves upon the development and yield of grain in wheat and maize.
- Amar Nath Laller, A study of the standard of feeding and management of dairy animals in some of the Panjab Cities.
- Inderjit Singh Kang, Economic and social organisations of some bazigar clans in the Pb. and their effect on rural economy.

- Om Prakash Chawla, A study of the effect of earth worms on soil productivity.
- Jasmer Singh Grewal, Analytical study of Agricultural and Social life in a Panjab Village.
- Raghunath Paul, A study of the effect on nitrogen and Phosphorus applied in different ratios to some important crops grown in Acid Soils in the Panjab.

Chemistry

M. Sc. (Honours School)

- P. C. Bansal, Studies in New Local Anaesthetics.
- M. C. Khosla, Studies in Synthetic Antibiotics related to Pencillin.
- Ved Vyas, Synthetic Insecticides—organo Phosphorus Compounds.
- Krishan Kant, Experiments in Production of Systematic pure oil from Indian Terpentine oil.
- Shakti Rani Pal, Studies in Antimalarials in Quinazoline series.
- Subash Chandar Gupta, Determination of Particle size distribution etc.
- Pran Nath Grover, Proteins of sunn hemp seed chemistry and their application in the plywood industry.
- Vir Daman Anand, Preparation and properties of artificial zoolities with barium and silver as active bases.
- Bawa Sarbir Singh, A study of Phosphates and arsenates.
- Gurdial Singh Grewal, Examination of Himalayan Cedar Wood oil and cedar leaf oil from *cedrus Deodra houd.*
- Jagdip Singh Sodhi, Rheological properties of protein adhesives.
- Jastendur Singh, Utilization of some Industrial wastes—Tapioca stems.
- Sarjant Singh Dhabiwal, Dipole moment and structure of molecular compounds.
- Brij Lal Sawhney, Some aspects of the reaction between clay minerals and neutral salts.

1953

Agriculture

M. Sc.

- Baldev Singh Bhatia, Preservation Studies on some Jack Fruit products.
- Balkar Singh, Colchicine Induction of Polyploidy.
- Man Mohan Singh, Comparative Contribution towards tonnage by various cane bionomices.
- Karam Singh, Study of some agronomic factors affecting yield and development and storage of colecaria (Arvi).
- Hardial Singh, Production and Marketing of Poppy in the Panjab.
- Tilak Raj Chadha, Propagation studies in Temperate fruits.
- Jaswant Singh Chohan, Red Leaf Spots of 'Jowar' in the East Panjab (India) with full study on that caused by the fungus collectotrichum jaminicolum.
- Pran Nath Chaudhry, A study of the effect of different amounts of water soluble salts in the soil on the growth and yield of important crops.

- Girdhari Lal, Study of the effects of some fertilizers vis (diff. Level of N. & P.) on the growth and yield of turnip.
- Devinder Singh Cheema, Studies on the effect of fertilization with Nitrogen and Phosphorus on the growth & yield of alleuvi cip (oveon Crop).
- Sohan Singh Dhesi, Comparative study of the Economics of some late sown crops.
- Raghbir Singh Rathee, To study the agronomic factors affecting the yield and quality of Barley and its performance as compared with wheat, particularly under late sown conditions.
- Kuldip Singh Kahlon, Investigations on the Bright disease of 'Guora' (Cyamopsis Prorafirdes) in the Panjab.
- Bhagwant Singh Khaira, Studies in growth analysis and yield of potato under different fertilizer treatments.
- Narinder Singh Gill, Some studies on the effect of fertilization with Nitrogen and Phosphorus on the growth and yield of Andropogan Serghum (Chari Crop).
- Bal Krishan Sharma, A study into the nature of soil profiles developed under different climatic zones of the Panjab.
- Baxish Singh Balam, Assessment of fertilizer needs of Panjab soils.
- Daljit Singh Virk, A study for the scope of improvements in the manufacture of indigenous milk products.
- Raghu Nath Singh, A study of indigenous methods of butter and ghee making in different parts of Panjab State and of the possibilities of bringing about improvements therein.
- Harbans Singh Rataul, Studies on the bionomics and control of *Pieris brassica* L.
- Zile Singh Kharab, Studies on Bionomics and Control of Mustard Sawfly *Athalia proxima* lug.
- Jagdish Chander, Identification of Mango varieties in East Panjab and relative studies on the extent and mode of Polyqurfipuy in these varieties.
- Baljit Singh Gill, Studies on the variability in important Economics and Botanical characters of *Sesamum Indicum*. L.
- Balwant Singh Sekhon, Study of variability in long linted hybrids of cotton and evolution of a variety for Ferozepur District.
- Gurmel Singh, Production and Marketing of wheat and barley bhusa in the Panjab (1).
- Dhani Ram Vasudeva, Study of Economic utility of Enotic Varieties of wheat.
- Hardyal Singh, Investigation into production and marketing of preserved fruits and vegetables in the Panjab.
- Jasmer Singh Grewal, Analytical Study of Agricultural and Social life in a Panjab village.

Chemistry

M. Sc.

- Rajinder Paul Khera, A new approach to the study of passivity of iron and stainless steel.
- Jawahar Lal Vaid, Electrodeposition of metals and alloys from pyrophosphate bath.
- Rajindra Kumar Sud, Behaviour of liquid Adsorbates held in porous bodies.
- Gurdas Singh Bola, Potentiometirc studies in oxidation reduction re-action.

- Inder Singh, Experiments in terpene chemistry, preliminary investigation with chloro devivatives insecticides.
- Rajpal Katyal, Adsorption of Benzene vapours by milk and acidoid behaviour and surface area of soils and clays.
- Surjan Singh, Studies in Friedel Crafts reaction involving unsaturated carbonyl compounds.
- Nand Kishore Maheshwary, Friedel Crafts reaction etc.
- Megh Kumar Jain, Studies in Antimalarials in Quinazolone series.
- Harcharan Singh, Chemistry and utilization of some cellulosic materials with particular reference to plastic and building boards.
- Raj Kumari Nahan, Studies in oxidation—Reduction Reactions oxidations with alkaline, Potassium Permanganates.
- Prabhat Chander Gupta, Studies in physico chemical aspects of charcoal.
- Rajinder Krishan Kaul, Studies of the factors affecting the heat stabilization and improvement of the properties of some species of Indian Timber.
- Harbans Singh Sachdeva, Experiments in Terpene Chemistry.
- Baldev Kapoor, Physico Chemical studies on soil Humus and its interaction with clay minerals.
- Ram Parkash Sood, Chemical examination of the oil and chakrasine oxalates from cassia absus linn.
- Saran Adhar Narang, Chemical studies of some Indian Lantaceae fats.
- Sarjit Singh Sandhu, Friedel Crafts reaction with unsaturated ketones and esters.
- Baldev Chander Gulati, Chemical study of the citronella oil from Cymbopogon nardus (L) Rendle.
- Ranjit Singh, Studies in oxidation reduction reactions.
- Sukhdev Raj Kapoor, Studies on Dipole moment and structure of Molecular compounds.

1954

- J. M. Seth, Studies on the corrosion of iron, stainless steel and other metals.
- Ishwar Chandra Lakshumana, Studies in Polycyclic Aromatic Hydrocarbons.
- Dilbagh Rai, Studies in Sulfonamides and Therapeutics in Thiazole series.
- Mohinder Singh Dhutt, Studies in Synthetic antibiotics related to penicillins.
- Bhagat Ram Sharma, The studies in the Friedel Crafts migrations.
- Jagjit Singh Sibia, Surface Reactivity of suspensions in relation to their surface area.
- Avinash Chand, Nuclear Methylation of Isoflavones.

Commerce

M. Com.

1953

- Parkash Kishore, Industries of Rohtak District.
- Sagar Chand Jain, Industrial Peace and Machinery for Conciliation in Uttar Pradesh.

1954

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- Gurbax Singh Shergill, Economic Survey of a village.
 Surjit Singh, Agricultural Development of Pepsu.
 Shrawan Kumar, Sugar Industry in Pepsu.
 Jawahar Lal Bhargwa, Production of cotton in Panjab.
 Miss Satnam Dhaliwal, An Economic Survey of Jhil in a village of Patiala District of Pepsu.
 Satish Chand Mathur, The Co-operation movement in Patiala and Pepsu.
 Jabindar Singh, Soil Erosion in the sub-mountain area of East Panjab.

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 Krishan Lal Nayar, Prospects of Sugar Industry in India with reference to the Panjab.
 Manohar Lal Kaul, Uptodate Economic Survey of the Co-operative in Jammu & Kashmir State.
 Lajpat Rai Khosla, Cottage Industries in Pepsu.
 Gurcharan Singh Degl, Motor Transport in Ludhiana District.
 Amrit Kumar, Cotton Textile Industry in East Panjab with special reference to the mills at Bhiwani.
 Kashmir Singh Sarai, Rehabilitation of Vernala Distt. Amritsar.
 Mukhtar Singh Bhullar, Tractor cultivation in Amritsar District.
 Krishan Kumar Walia, An Experiment in Rehabilitation, Faridabad.
 Kamla Nayar, Co-operative movement in the Ferozepur Distt.
 Vishwa Mitra Sharma, Bee-keeping, a cottage Industry in the Panjab.
 Rajindra Nath Mumick, Sports Industry in Panjab.
 Bharat Bhushan, Industrial labour in Pepsu.

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- Indra Sharma, A social and Economic survey of Kheri Gujran.
 Ram Dayal, Economics of Tractor.
 Raj Kumar Kohli, Railway since Independence.
 Kapur Singh, Production and Marketing of oil seeds in Amritsar.
 Iqbal Singh, Local Taxation in the Panjab.
 Gurbachan Singh Randhawa, The extent of under employment and un-employment in Panjab village Nangli.

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- Rajinder Nath Tandon, Milk supply of Ferozepur.
 Narinder Kaur, Economic implications of prohibition in Palyal.
 Kullinder Singh Chhatwal, Bicycle Industry in Panjab.
 Hari Ram Sharma, Economic survey of 5 sample villages of Rewari Tehsil Gurgaon.
 Ram Kumar Ohri, Working of the Employees State Insurance Scheme in Delhi.
 K. R. Parmeshwaran, Industrial relations in Delhi State since 1939.
 Pran Krishan Bhardwaj, Community project Nawan Shahr Distt. Jullundur.
 Pran Parkash Mehra, Agricultural co-operation in Jullundur Distt.
 Baldev Datt Sharma, Production and Marketing of mangoes in Distt. Hoshiarpur.

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- Badri Narain, A critical Review of Literary methods in India.
 Dharam Vir, A critical Survey of the suitability and working of the new General Science Syllabus in the Panjab.
 Miss Raminder Kaur, History and development of Teacher-training in the Panjab.
 Tilak Raj Sharma, Truancy among children of age group 12-15 years in the schools of Jullundur.
 Kewal Krishen Verma, An investigation into the activities, interest-cum-attitude of Graduate Teachers of the Panjab during long vacation.
 Inderjit Singh Chaudhri, The development of social (adult) education in India.
 Mohinder Kaur, The present status of Social Education in India.
 Karam Singh, An investigation into the vocational interests of Matric students.
 Piara Singh Hundal, An investigation into the leisure-time activities of secondary school students in Jullundur city.
 Miss Krishna Chadha, Arithmetic achievement test for seventh class.
 Harchand Singh, A critical analysis of the adult syllabi prescribed in the various states of India.

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- Gurdev Singh Bara, A regional and Economic Geography of Ambala Distt.
 Kulwant Grewal, Cotton cultivation in Panjab.
 Devindar Kaur, A regional & Economic Geography of Delhi State.
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 Jaswant Singh Deol, The cultivation of Groundnut in the Panjab.

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- Sat Dev Verma, Distribution of population in Panjab.

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- Miss Krishna Gorawar, An Economic & Regional Geography of Hoshiarpur District.

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- Inder Singh, The origin and passage of the Government of India Act, 1919.

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- Santosh Verma, Reforms Act, 1919.
 Karam Singh, Circumstances leading to the First Anglo Sikh War.
 Iqbal Singh Sandhu, The growth of National movement in India.

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Nirmal Kant, Sikh Afghan relations.

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Surinder Nath, The History of Congress Movement from 1919 to 1935.

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Dr. B. S. Mathur, Deficiency Hypoproteinemia in U.P. and the effects of various Recuperative Measures.

Dr. Y. S. Bawa, Radiological Investigations of "Lung Suppurations".

Dr. Ishar Dyal Singh, Distribution of Glycogen in Lives of Fowl and Guineapig under different experimental conditions.

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Dr. Jagdish Chand Soni, Chemotherapy in Tuberculosis, A standard Technique for Laboratory Screening of Anti-Tubercular Drugs.

Dr. Sharad Chander Kapoor, Electrocardiographic Patterns in the Collapse Therapy of Pulmonary Tuberculosis.

Dr. Kailash Chandra Pasi, Intravenous Administration of Iron.

Dr. S. Kaul, Fractional Test Meal.

Dr. G. D. Thapar, Etiological and Therapeutic Aspects of Asthma & Allergic Rhinitis.

Dr. Gurbachan Singh, Etiology of Diarrhoea and Dysentery.

Dr. Kulwant Singh R. Bedi, Therapeutic Aspects of Neurosyphilis.

Dr. Surjit Singh Jolly, Peripheral Neuropathies.

M.S.**1953**

Dr. Manmohan Singh, Role of Radiology in the Diagnosis of Ileocaecal Disease.

Dr. Kuldeep Singh, A Critical Study of 25 cases of Prolapsed Intervertebral Disc.

Dr. Pramjit Singh Grewal, Orthopaedic Treatment of Poliomyelitis—A critical Study of 25 cases.

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Dr. Shamar Singh, Bone Grafting.

Dr. Waryam Singh, Evaluation of Methods of treatment of Empyana Thoracic.

Dr. Madan Lal Gupta, Congenital Club Foot and its treatment.

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Bakshish Singh Gill, Studies on Poultry Coccidia and Coccidiosis in India.

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Biochemistry

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- P. S. Vasantgadkar, Effect of ammonium compounds on Blood Sugar.
H. J. Gadre, Studies in the changes in some of the metabolic activities of the Mosambi plants due to mottle-leaf.

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- S. Visveswara, Cytological studies in some members of the family Cucurbitaceae (1) Cytological studies in four species of the genus *Melothria* (2) Sex Chromosomes in *Coccinia indica* W. and A.
A. S. Subramanyam, Karyological studies in some Indian Oil seed crops and their wild forms.

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- J. V. Joshi, Chemical analysis of the flesh of Chicali, Kirid and prawn and Vitamin B and Vitamin C contents of local leafy vegetable.
M. G. Potdar, Electro Chemical preparation of Barium Hypochlorite and Chlorate by the Electrolysis of Aqueous Barium Chloride.
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C. M. Deshpande, Dipole moment and the nature of the Chemical Bond.
M. P. S. Agny, The Potentiometric studies of the Double Salt.
K. A. Khasgiwale, The Potentiometric studies of Hydrrous Oxides and metallic soaps.
Sindhu Raghunath Parkhi, Synthesis of completely reduced analouge of hexestrol.
P. H. Bandivadekar, Electrolysis of Aq. stronium chloride and electro-deposition of tin from Sodium Thio Stannate.
A. S. Rajdhyaksha, Dehydration of Castor Oil with substituted sulphenic acids as catalysts.
V. A. Saraf, Studies in dehydration of Castor oil.
Kusum J. Joshi, Preparation of antitubercular compounds.
A. J. Dangre, Potentiometric studies of Sugar Complexes and studies in Gur manufacture.
J. A. Karanjia, Studies in the nitrification of a few manures in the major soils of the Bombay State.

- M. M. Shah, Physico Chemical studies of Complex Compounds of Copper with Carbohydrates.
- M. S. Naik, Studies in Indian Vegetable Foods.
- K. Z. Patil, Decomposition of Diazonium Salts.
- P. G. Sawardekar, Electrodeposition of Cobalt and of alloys of Cobalt.
- D. S. Bendale, Chemical utilization of Agricultural Wastes.
- A. B. Kallianpur, Electrodeposition of Tin & its alloys.
- P. S. Kulkarni, Viscosity of Milks.
- K. S. Raghavan, Effect of continuous irrigation, manurial and agronomic practices on the properties of the medium black soil of the Sugarcane Research Station, Padegaon.
- M. A. Joshi, Utilization of Sambhar Lake Bitterns.
- K. G. Divekar, Colorimetric and Potentiometric Studies of Tannins.
- D. D. Deshpande, Ultrasonic Velocity in Gases.

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- P. V. Sowani, Study of Rocks occurring in the southern parts of the Ratnagiri District etc.

Microbiology

M. Sc.

- H. D. Tejwany, Microbiological Assay of essential Amino Acids in Buffalo milk.
- Maloo M. Vartak, Correlation of mineral composition, microbiological activities and the fertility of some soils in the Bombay State.

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M. Sc.

- M. R. Bhat, Optics of Heterogeneous Media.
- A. K. Ramdas, Studies in Crystal Optics.

Zoology

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- R. H. Umadikar, Study of Parasitic Nematodes.
- P. G. Vartak, A comparative anatomical study of the Indian species of spironoura with the detailed Histology of one species.
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Madho Ram Paliwal, A comparative view of the experiments in national education in India, begun on 31st March, 1953.

Rameswar Pd. Gupta, Mysticism in Indo-English Poetry with special reference to Sir Aurobindo's Savitri, begun on 22nd July, 1952.

Nagarmal Sahal, A study of Realistic development in modern Irish Drama, begun on 6th November, 1952.

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Nihalchand Mital. Economic History of Rajputana from 1707 to 1789 A.D. begun on 8th November, 1953.

Miss Kamla Gangwal, Wealth & Welfare in Kota Dn. of Rajasthan, begun on 25th November, 1953.

Rama Autar Gupta, Principles & Problems of Railway Rates structure in India, begun on 1st November, 1952.

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Ram Chandra Purohit, The Enquiry into the Braj-Bhasha Poetry during the Modern period of Hindi Literature, begun on 15th July, 1953.

Miss Kamla Saxena, Madhya-yug-ki-Hindi Kavita men Madhurya Bhavana moolak ka vikas, begun on 30th July, 1953.

Awadh Vihari Vajpai, Hindi ke Khand-kavya-Ak Adhyayan, begun on 23rd August, 1952.

Anoop Chand Jain, The Romantic Realism of Prasad, begun on 19th September, 1952.

Mrs. Swarn Lata Agarwal, Rajasthani Nari Lok-geet, begun on 16th February, 1953.

Vipin Vihari Vajpayee, Yuddhottar Hindi Sahitya, begun on 26th August, 1952.

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Miss Krishna Swaroop, Inter-State Relations in Rajasthan from 1669 to 1818, begun on 30th September, 1952.

Mrs. Kamla Kumari Beniwal, Marathas and the Jaipur State, begun on 1st March, 1954.

Miss Hemlata Kulshreshtha, The place of family in Vedic Sociology, begun on 1st May, 1953.

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Miss Krishna Kumari Mehta, Diplomacy in Sanskrit Literature, begun on 2nd March, 1953.

Ludhir Kumar Gupta, Daya Nanda's contribution to Vedic Exegesis, begun on 24th December, 1952.

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Miss Nirmal Arora, The development of the stero nodules of Aeschhynomene together with some observations tissue responses to hormone treatment (Chemistry), begun on 14th August, 1952.

Balwant Desrao Deshpande, A detailed study of the Root structure of Liliaceae with special reference to the Tenestinal velamen found in them, begun on 1st October, 1952.

Chemistry

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Krishna Murti Dakshni Murty, Lipotropic factors in various articles of diet, begun in July, 1953.

Miss Kamala Zutshi, (a) Studies on the composition of some natural Aluminium Silicates and Synthetic Aluminium Silicates by Analytical methods, (b) Their behaviour in relation to iron exchange phenomena P H and (c) Adsorption capacity in relation to the changes in the composition and structure of the colloidal complex, begun on 1st August, 1952.

Ramjilal Mital, Studies on Diamagnetism of irons in Crystals, begun in July, 1953.

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Keshava Chandra Sondhi, Studies in the Hyoid Apps and Associated structure in the reptilia, begun on 26th March, 1953.

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- S. B. Saxena, Studies on soil and Aquatic fungi of Sagar, begun on 12th April, 1952, work completed.
- K. K. Bhatia, Forest Ecology, begun on 12th April, 1952, work completed.
- D. K. Tiwari, Grassland Ecology, begun on 8th December, 1952, work completed.
- M. P. Shrivastava, Morphology and Ecology of aquatic plants of Sagar, begun on 8th December, 1952, work in progress.
- L. P. Mall, Ecology of Drying Pools and some common weeds at Sagar, begun on 7th February, 1953, work in progress.
- Shridhar Upadhyaya, Development of soil in relation to vegetation, begun on 1st June, 1953, work in progress.
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 K. V. Narayan Rao, Photo-chemical reactions, begun on 15th April, 1951, work in progress.
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 D. P. Kharkar, On the upgradation & the utilisation of Titanium ores, begun on 5th May, 1952, work in progress.
 J. K. Zope, Critical study of Methods of Spectro-chemical determination of Manganese, begun on August, 1952.
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R. P. Roy, Employment Service Organization in India.

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K. N. Raina, Measurement of Teaching aptitude.

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G. Radhakrishna, Religious belief of later adolescence.

D. G. Kulkarni, Economics of Secondary Schools in M. P.

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P. N. Jagtap, Basic associates of the Orchocan complex in the M. P. begun on 20th August, 1952, work in progress.

K. C. Dubey, Petrology and Petrography of Bundelkhand complex, begun on 10th September, 1953, work in progress.

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 K. K. Pathak, Maithilisharan Gupta ki Kavya-kala ka Vikas.
 Ramlal Singh, Pandit Ramchandra Shukla ke Samiksha Siddhantya.
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 M. M. Sharma, Adhiluk Hindi Samiksha Siddhanto ka Vikash.
 J. N. Awasthi, Hindi Krishna Bhakti Kavya me Shringar ka swarup tatha
 Shringar varnana.
 P. C. Tiwari, Bhartendoo Yug me Hindi Gadda ka Vikash.
 P. V. Ramanna Reddy, A Comparative Study of 'Reeti' in Sanskrit, Hindi
 and Telugu languages.
 Sagar Chand Diwakar, A critical and comparative study of Gandhian and
 Socialistic tendencies in Modern Hindi Literature.
 Kumari Sushila Devi, Hindi me Nibandha ka Udbhava aur Vikas.
 Kumari Vimla Devi, Prasad ki Samajik aur Sanskrit Chintadhara.
 Ram Pratipal Mishra, Saptashati (Satsai) Parampara ka Kramik Vikash
 aur Samanushilan.

Political Science

- S. C. Verma, Contribution of Gandhi to Political Thought.
 B. L. Misra, Govt. of M.P. from 1919 to the present day.
 R. N. Agrawal, Some aspects of administration of Justice.
 R. P. Shrivastava, Civil Services in India.
 D. C. Sharma, Rural administration in U.P.
 Kumari Santosh Tripathi, Political Parties in India.
 P. K. Shukla, The Post-Partition problems of India.
 B. P. Argal, Financial administration of a district in M.P.

Marathi

Ph. D.

- D. L. Adoni, Semantic Study of early Marathi Literature.

Geography

Ph. D.

- A. K. Chakravarty, Regional Geography and man's development in Baghel-
 khand.
 K. K. Shrivastava, Economic and Commercial Geography of Madhya
 Pradesh.

Archaeology

Ph. D.

Sudhakar Pande, Kalachuris of Ratanpur.

B. L. Jain, Jain Iconology.

Philosophy

Ph. D.

H. L. Chaurasia, The criterion of Truth in contemporary Theories of knowledge.

Sheo Kumar Shrivastava, The Problem of Self.

Ku. Shakuntala Sinha, The Problem of Self with reference to Kant and Sankara.

History

Dr. H. L. Gupta :

British Relations with Indian States from 1805-1835, for D.Litt., begun on 1948, likely to be completed in 1956.

British Relations with Tibet and Nepal, begun in 1952, likely to be completed in 1956.

S. R. Mehrotra, Social thought in Ancient India from 600 B.C. to 184 B.C., for Ph.D. begun in 1951, likely to be completed in 1956.

Dr. V. P. S. Raghuvanshi, Indian Society in the 19th Century as affected by European influences.

Miss Eva Ganguli, Influence of Vaishnavism on the life and thought of the people of Northern India during the mediaeval period.

Miss Sushila Vaidya, Role of women in Northern Politics from 1644-1744 A.D.

Sudhakar Pandeya, Kalachuris of Ratanpur.

Sanskrit

Dr. V. M. Apte :

Six separate monographs embodying critical studies in the six traditional Vedanta subjects namely Phonetics, Metrics, Grammar, Etymology, Ritual and Astronomy, *completed*.

The Allegorical significance of the word for 'Cows' in the Rgveda, published in Quarterly Journal of the Mythic Society Vol. XLV.

Research work of the Ph.D. students under the guidance of Dr. V. M. Apte :

A Critical Edition of the *Padarthatattva-Nirnaya of Anandanubhava* with an exhaustive Introduction & Notes, begun in 1954, will be completed by May, 1956.

Character-types in Sanskrit Plays, begun in September, 1952, will be completed by May, 1956.

Studies in Rgvedic vocables occurring only once, begun in 1953.

Rgveda Mantras in the Atharva-Veda, a study in the new ritual or magical contexts of the R. V. Mantras, begun in August, 1954.

Zoology**Ph. D.**

- R. S. Saini, Studies on *Autacophora Abdominatis* Feb, begun on 21st November, 1952, work completed.
- Shyam Bihari Agrawal, Studies on *Acrididae*, begun on 20th November, 1952, work completed.
- R. K. Shrivastava, Studies in Indian Helminths, begun on 7th February, 1953, work in progress.

TRAVANCORE

M. Sc.

- C. J. Phillip, Stability studies in certain vegetable oils.
- T. V. R. Pillai, Studies on Indian fish and fisheries.
- P. T. Joseph, Studies in the Organic Chemistry of Zirconium.
- C. P. Namboothiripad, Studies on the Glyceride composition of certain vegetable oils.
- P. S. Mahadevan, Studies in the Phyto-toxicity of certain organic compounds.
- M. M. Koshy, Phosphate studies in Travancore-Cochin soils.
- K. V. Krishnan Nair, Geology of a part of Southern Travancore with special reference to the Petrology of the syenite of Puttethi.
- P. Ramavarma Raja, Platyhelminth Parasites of the Marine Food Fishes of the Travancore coast.
- N. Saraswathy Bhai, Studies in the Chemistry of certain natural products.
- K. G. Padmanabhan, Bionomics and Embryology of *Macropodus Cupanus*.
- N. Joseph Paulose, Synthetic Experiments in Hetro-Cyclic compounds on plant products.
- T. C. Krishnankutty, Studies on Plant products.
- H. Sankarasubramony Iyer, Studies on some soil conditions in relation to the root and leaf disease of the coconut palm in Travancore-Cochin.
- C. V. Paulose, The Geology of a portion of South Travancore around Cape Comorin with special reference to the petrogenesis of the charnockites and associated rocks of the area.
- T. N. Santha Kumari, Natural products of Medicinal or Economic importance.
- Ravi Varma, Sampling Theory.
- K. Vasudevan Nair, Glyceride structure of some vegetable oils.

Ph. D.

- N. Venkitaraman, Studies on the catalytic oxidation of Organic compounds in the vapour phase.
- A. P. Mathew, The Embryology of *Palamnacus Scaber*.
- P. Atchutha Kurup, Studies on Plant Antinutrients Pterigospermin the antibiotic Principle of *Moringa Pterygosperma Gaertn.*
- R. Sivasankara Kurup, Growth of Organism (Statistics).
- E. J. Thomas, Time Series (Statistics).
- V. R. Rajagopala Sarma, Distribution (Statistics).
- C. A. Nainan, Cytogenetics (Botany).
- K. Ganesa Das, Studies on Indigenous Drugs (Chemistry).
- K. G. Easwari Amma, Embryology and Development of *Hydracrine* and *Streptocephalus*.
- P. A. John, Organisms destructive to submerged timber. Marine Organisms which destroy wood and life history.
- K. Ramakrishna Pillai, Studies on arthropoda (Marine Biology and Fisheries).

- A. D. Siddiq, Tunichates of the Travancore-Cochin Coast.
- K. C. George, Biology of Stolephorus Endocrine glands of fishes.
- P. S. Sambandha Murthi, Biology of Backwater bivalves and their distribution.
- C. V. Kurien, Studies on Crustacea Morphology and the development of Sanguinolaria diphos (a siphonated Molluse).
- K. Sadasivan Pillai, Studies in the Chemistry and Utilisation of Marine products.
- G. Venkiteswaran, Maternity rates in Travancore-Cochin.
- C. J. Phillip, Constitution of some vegetable oils.
- A. G. Krishna Warriar, A critical study of Vyaktiviveka.
- B. Hridayakumari, English Biography in the 20th century.
- E. T. Mathew, Land problems in Travancore-Cochin.
- K. Sreedharan Nair, Psychology of social taboos.
- N. Anantaraman, Psychology of conflicts in Industry.
- K. G. K. Panicker, Project studies in Industrial relations.
- C. Narayana Pillai, A critical study edition of Ramacharith, with comparative study of its vocabulary grammar.
- K. S. Narayana Pillai, The Influence of Indian Classical literature, on the romantic movements in Malayalam Poetry.
- Pala Gopalan Nair, A critical study of Kunchen Nambiar.
- Mekkalla Parameswaran Pillai, Humour in Malayalam Literature from ancient times to the modern.
- C. Jesudasan, A survey of Tamil literature in the Sangam period.
- S. Chenthi Perumal, The Didactic period in Tamil Literature.
- R. Veerabhadran, The Classical Tamil and its nature.

M. Litt.

- G. Kumara Pillai, The Dramatic Technique of Bernard Shaw.
- K. T. Mathai, J. B. Priestley.
- P. D. Thomas, Local Government in Travancore-Cochin.
- K. J. Sebastian Cleitus, Price Trends in India.
- K. Bhaskaran Unnithan, Coir Industry in Travancore-Cochin.
- K. N. Zachariah, Adjustment problems of students.

D. Litt

- K. Marthanda Varma, History of Kerala.

UTKAL

Rajendra College, Bolangir

Dr. K. B. Tripathi, Western Oriya dialect, begun in 1954, in progress.

Ph. D.

S. N. Jena, Controlling factors in the Economic Development of Orissa, begun in 1951, in progress.

B. C. Ray, Orissa during Maratha rule, begun in 1951, in progress.

S. K. C. D. College, Parlakimedi

S. C. Rakshit, 'Microbiology'—Soil nodule Bacillus in all kinds of leguminous plants, for Ph.D., begun in November, 1951.

Dr. A. Lal and S. C. Rakshit, Relation between the Microbial activities in Soil and the growth of higher plants, paper already in press for publication.

Krishna Charan Das, Utilisation of Organic Compds. in Inorganic Analysis, begun in September, 1952.

G. M. College, Sambalpur

Dasharathi Mishra, Studies in Shall-seed-oil and its nutritive value, for D.Phil. (Science), begun in 1950.

Sachidananda Naik, Effect of growth promoting substances on crop production, for Ph.D., begun in 1951.

Baidhar Mahanandia, Vaishnavism in Orissa, for Ph.D., begun in 1952.

Fakir Mohan College, Balasore

Siddheshwar Hota :

Papers published :—

The Miracle of the Dying Sun, published in Journal of the Andhra Historical Society, Vol. XIX, 1952.

Study of Place-Names of Utkal—Its summary published in "Summaries of Papers" of the Lucknow Session of All-India Oriental Conference, 1951.

Chandrasekhar on Parallax—Published in Astrological Magazine, Bangalore, 1947.

The Educational Value of Oriya Folk-Literature, published in The Quarterly Journal of the Mythic Society, Bangalore, 1952.

Non-Aryan Elements in Aryan Culture, (Philology), published in The Fakir, 1952.

The Influence of Language on Cultural Life, published in Sahakar, 1358.

New Age in Language, published in Sarbodaya, 1953.

Papers under publication :—

The Stamp of Dialectical Varieties on Oriya.

Kalidas and the West.

Role of Hindi and State Languages of India.

The attitude of India to the Sanskrit Researches with a special reference to Utkal.

Papers ready for Publication :—

Desi-Elements in New Indo-Aryan.

An Approach to Hindu Mathematics (Vedic period).

Some Vocables from Koraput Colloquy.

Research work rewarded :—

Was Utkal a Seat of Oriental Learning and Culture ?

Influence of non-Indo-Aryan upon Indo-Aryan (Philology), for D.Litt., begun in 1948, in progress.

M. P. C. College, Baripada**Botany**

S. N. Mitra, Collection & indentification of Fungi of economic importance, begun in 1952.

Economics

R. C. Patnaik, Local finance in Orissa, for Ph.D., not yet published.

History

N. K. Sahu, History of Buddhism in Orissa, for Ph.D., begun in 1951, not published, submitted to the U.U. in the month of March, 1954.

Mathematics

B. S. K. R. Somayajulu :

Euler's Totient function $\phi(n)$ begun in 1949, published by the Indian Mathematical Society in their 'Mathematics Student'.

Quadrature of plane curves, begun in 1952.

Oriya

N. Samantarai, History of Modern Oriya Literature, for Ph.D., begun in 1952, likely to be completed in 1955.

R. N. Baral, Lives and works of twelve modern Oriya writers, begun in 1953, likely to be completed in 1957.

B. K. Satpathy, Modern Oriya Poetry, begun in 1953, likely to be completed in 1955.

Philosophy

P. Rath, Yoga & Psycho-analysis (with a special reference to Jungian Psychology), begun in 1952.

Sanskrit

- R. M. Mohapatra, Evolution of Hindu Deities through ages, begun in June, 1952 ; Few articles on this topic were published in the "Chandrika". The work has not yet taken any definite shape for publication.

Ravenshaw College, Cuttack

Botany

B. Samantarai & G. Misra :

Hormone induced rooting in isolated leaves, begun in 1950, published in Science & Culture, 18, 388-389.

Rooting response in isolated tropical leaves, begun in 1951. A report with seven species of leaves, published in Jour. Ind. Bot. Soc. 32, 3, 1953.

The effect of short day on early rice, begun in 1953, published in Proc. Ind. Sci. Congr. Part III, 1954.

B. Samantarai and H. Patnaik :

Response of *Boerhaavia diffusa*, L. twigs to synthetic hormones, begun in 1951, published in Proc. Ind. Sci. Congr. Part III, 1953.

Response of *Gomphrena globosa*, L. twigs to synthetic hormones, begun in 1952, published in Proc. Ind. Sci. Congr. Part III, 1954.

B. Samantarai and S. K. Mitra, Osmotic pressure in isolated leaves of *Ipomoea batatas* with indole acetic acid, begun in 1951, published in Proc. Ind. Sci. Congr. Part III, 1953.

G. Misra :

Photoperiodic response of some India wheat, begun in 1949, published in Science—Washington, 118, 1953.

Photoperiodic response of spring rice, begun in 1949, published in Science and Culture, 18, 603, 1953.

Photoperiodic behaviour of medium-early rice, begun in 1949, published in Science, Washington, 118, 1953.

Photoperiodic response of early-winter rice, begun in 1949, published in Proc. Ind. Sci. Congr. Part III, 1954.

Photoperiodic response of late-winter rice, begun in 1949, published in Pro. Ind. Sci. Congr. Part III, 1954.

B. Padhi :

Stemphyllium leaf spot of lettuce, begun in 1950, published by University of California.

Alternaria like mutation of stemphyllium, begun in 1951, published in Proc. Ind. Sci. Congr. Part III, 1953.

Sphaerostile, in Bamboos, begun in 1953, published in Proc. Ind. Sci. Congr. Part III, 1954.

Advantages of strawagar media in study of fungi, begun in 1953, published in Proc. Ind. Sci. Congr. Part III, 1954.

B. Padhi and W. C. Snyder, Stemphyllium leaf spot of lettuce, begun in 1950, published in Phytopath, 44, 175-180, 1954.

Ph. D.

- B. Samantarai, G. Misra and T. Kabi, Studies in rooting response, begun in 1951, published in *Current, Science*, 22, 48, 1953.
- B. Samantarai and A. S. Dubey :
 Effect of centrifuge on the dormancy of rice grains, begun in 1951, published in *Proc. Ind. Sci. Congr. Part III*, 1953.
 Induction of drought resistance in rice plants, begun in 1953, published in *Proc. Ind. Sci. Congr. Part III*, 1954.
- B. Samantarai and T. Kabi :
 Secondary growth in petiole and the partial shoot theory of the leaf, begun in 1950, published in *Nature, London*, 172, 37, 1953.
 Rooting response of the isolated leaves of *Helianthus annuus* and *Amaranthus gangeticus* var. *tristis*, begun in 1951, published in *Pro. Ind. Sci. Congr. Part III*, 1953.
 Combial activation and secondary growth in rooted leaves of *cephalandra indica* and the partial shoot theory of the leaf, begun in 1953, published in *Proc. Ind. Sci. Congr. Part III*, 1954.
 Combial activation in the petioles of the rooted leaves of *Pogostemon plectanthroides* and partial shoot theory of the leaf, begun in 1952, published in *Proc. Ind. Sci. Congr. Part III*, 1954.
 Rooting response in isolated tropical leaves, begun in 1950, published in *Proc. Ind. Acad. Sci.* 39, 243-248, 1954.

Chemistry**Ph. D.**

- B. Prasad and B. Nayak, Determination of activity co-efficients of some of bimonovalent salts with the help of third order electrodes and study of their dissociation in aqueous solution, begun in 1952, work in progress.
- B. Prasad and D. Mangaraj, Behaviour of some bimonovalent salts in aqueous solution (by transport number measurement and spectrophotometrically, begun in 1953.
- B. Prasad and R. K. Nanda, Studies on the behaviour of certain nitrates and thiocyanates in aqueous solution (by solubility method and spectrophotometrically) begun in December, 1953.
- B. Prasad and P. K. Jena, Studies on the behaviour of bi-mono, mono-bi, and bi-bivalent electrolytes in aqueous solutions (by e.m.f. method) begun in 1952.
- B. Prasad and S. C. Sircar, Studies on the dissociation of mono-monovalent, bi-monovalent and bi-bivalent electrolytes in aqueous solution by e.m.f. method, begun in 1952.
- S. Pani and Ch. B. Nanda :
 Hydrolysis of tartaremetic, begun in January, 1954.
 Oxalate complex of antimony at lower ph in solution and the composition of the solid phase in equilibrium with solution, begun in April, 1954.
- S. Pani and D. V. Raman Rao, Some aspects of the chemistry of molybdenum, begun in July, 1952.

M. K. Rout & others :

- (i) Thiazole derivatives, (ii) Thiazolidone derivatives, (iii) Thiohydantoin derivatives, (iv) Rhodanine derivatives, (v) Thiodizole derivatives, (vi) Selenazol derivatives, (vii) Mercury, arsenic, biguanide and sulphonamide derivatives of the above compounds and study of their useful biological properties, (viii) Use of some of the above compounds as analytical reagents, (ix) Preparation of Thipyruvic acids and nitrates, (x) Antispasmodics.

M. Sc.

- S. Pani, D. V. Raman Rao and B. C. Mohanty, Study of the reaction of chromate ion with acids by glass electrode, begun in January, 1953.
- S. Pani and others, The study of the complexes of trivalent antimony with the following ligands : (a) by solubility method and (b) pH titration method : (i) Lactate, (ii) citrate, (iii) glycolate, (iv) malate, (v) gluconate and (vi) Tartarate ligands, begun during October, 1952, to May, 1954.
- S. S. Guhasircar and S. Satpathy, Use of Thiosemicarbazone in Inorganic Analysis Part I, begun in October, 1952, published in Jour. Ind. Chem. Soc. 1954, 31, 450.
- S. S. Guhasircar and R. N. Misra, Use of thioglycollic anilides as reagents in Inorganic Analysis, begun in October, 1953.
- S. S. Guhasircar and G. N. Mitra, Use of Thiosemicarbazone in Inorganic Analysis, Part II, begun in October, 1953.
- S. Pani and S. Panda, Determination of percentage of cement in samples of plaster from soluble silica contents, begun in November, 1953.

Mathematics

- B. Misra, Theory of numbers, begun in 1952, published in American Mathematical Monthly, Vol. LX No. 5, May, 1953.
- R. Mohanty and B. Misra, Fourier series (on absolute Logarithmic summability of sequence associated with Fourier series), begun in middle of 1953, published in Tohoka Mathematical Journal 2nd series, No. 6, June, 1954.
- R. Mohanty, On the absolute Ce'saro summability of series associated with Fourier series, begun in 1951, published in Bulletin of the Calcutta Mathematical Society (44), 4, December, 1952, pp. 152-154.
- R. Mohanty and S. Mohapatra, On the absolute Logarithmic summability of the Fourier series and its derived series, begun in First quarter of 1954, published in Pro. Ind. Sci. Congr. Part III, 1955.

Ph. D.**R. Mohanty and M. Nanda :**

- On the behaviour of Fourier Co-efficients, begun in June, 1952, published in Proc. of the American Math. Society, Vol. 5, No. 1, pp. 79-84, Feb., 1954.
- Notes on the first Ce'saro mean of the derived Fourier series, published in Proc. of the American Math. Soc. Vol. 5, No. 4, pp. 566-570, August, 1954.
- Logarithmic summability of the derived Fourier series, published in Proc. Ind. Sci. Congr. Part III, 1955.

Physics

Ph. D.

- A. K. Dutta, H. K. Rout and B. S. Mohanty, The range of refractive index in organic liquids, begun in 1st December, 1953.
- A. K. Dutta and K. Samal, Absorption of ultrasonic waves in organic liquids by heat measurements, begun in 15th November, 1953, published in Nature, London, 20th November, 1953.
- A. K. Dutta and Trinath Ratho, Critical study of small angle scattering of X-Rays by organic liquids, begun on 1st October, 1953
- B. B. Deo, Ultrasonic absorption in electrolytic solutions, begun on 1st September, 1952.
- B. Mishra and B. D. Rath, Wave nature of matter, Part II, begun on 6th November, 1952.
- P. Banerjee, Proton-proton-scattering at high energies, begun on 1st September, 1952, published in Ind. Jour. of Physics, November, 1953.

Psychology

J. B. Das :

Retroactive Inhibition, begun in 1953.

An attitude scale for communism, begun in 1954.

R. Rath and J. P. Das, Prestige suggestions, begun in 1954.

R. Rath :

Measuring attitudes of University students towards some political, economic and social issues, begun in 1953.

Standardising Raven's progressive Matrices, begun in 1950, still in progress.

Juvenile Delinquency, begun in 1951.

Zoology

B. K. Behura :

Notes on the occurrence of *Histiostoma polyporia* (ond.) *Tyroglyphidea* (*Acari*) in the British Isles, begun in 1950, published in Proc. Ind. Sci. Congress, Part III, 1954.

Notes on a slide of the great Acarologist, A. D. Michael in the collection, the British Museum, begun in 1950, published in Proc. Ind. Sci. Congress, Part III, 1954.

Depredation of the giant African snail, *Achatina fulica* (Ferussac) in Balasore (Orissa), begun in 1952, published in Proc. Ind. Sci. Congr. Part III, 1954.

Adaptive and camouflage of the common membracid, *otinous oneratus* walk (*Homoptera* : *Rhynchota*), begun in 1950, published in Proc. Ind. Sci. Congr. Part III, 1955.

The feeding mechanism of *Histiostoma Polypori* (oud) (*Acari*), for Ph.D., begun in 1949, published in Proc. Ind. Sci. Con. Part III, 1955.

Studies on the Aphididae of Orissa, begun in 1951.

B. K. Behura and G. C. Sengupta :

Locust visitation of Orissa in 1951, begun in 1951, published in Proc. Ind. Sci. Con. Part III, 1953.

Observation on the life-history of *Lema signatipennis* Jac. (Chrysomeliadae) as a pest of Turmeric (*curcuma longa*), begun in 1951, published in Proc. Ind. Sci. Con. Part III, 1953.

Notes on the locust visitation of Orissa in 1953, begun in 1953, published in Proc. Sci. Congr. Part III, 1954.

M. B. Lal and M. S. Kanungo, Invertase in palamnaeous bengalensis, begun in 1952, published in Science, Jan. 16, 1953.

M. S. Kanungo :

Ecology and behaviour of the scorpion palamnassus bengalensis, begun in 1952, published in J. Bom. Nat. His. Soc., August, 1954.

Scorpion heart and its psysiology, begun in 1953, published in Proc. Ind. Sci. Con. Part III, 1955.

R. N. Mukherji and M. S. Kanungo, Invertase in the common fresh water mussel, begun in 1953, published in Sci. Cul., October, 1954.

P. N. Chatterjee, Systematic study of Indian trematodes and cestodes, for Ph.D., begun in 1952.

Arts

Education

P. K. Kar, Handwriting scale in Oriya, for M.Ed., begun in October, 1952.

English

A. P. O. 'Brien, Graham Greene and the lost Dimension, begun in 1954, Paper contributed to the All India English Teachers' Conference, 1954.

B. Das :

Lord Lytton as Novelist, begun in 1953.

The Imagery of Byron, begun in 1954.

The scepticism of Sir Thomas Brown, begun in 1954. Paper contributed to the All India English Teachers' Conference, 1954.

T. Misera, Somerset Maugham as a Playwright, begun in 1954.

Ph. D.

S. Das, Eastern and Western Theories of Comedy, begun in 1952.

T. E. Jayaraman, India in English Fiction in 1900 to 1950, begun in 1953.

P. K. Pati :

A study of Rudyard Kipling with reference to his understanding of India, begun in 1952.

Modern Love Lyric, Paper contributed to the All India English Teachers' Conference, 1954.

Economics

Ph. D.

A. K. Sen, Economic Development of Orissa, begun in 1952, in progress.

Baidyanath Misra, Trends in post-war Trade policy in India, begun in 1954, in progress.

Harekrishna Misra, Population problem of Orissa, begun in 1952, in progress. A paper has been published in conference number of the Indian Economic Journal, 1954.

Khetramohan Patnaik, Post-war Monetary policy in India, in progress.

History

G. S. Das :

Samara Taranga, begun in 1953.

History of Cuttack.

D. Phil

K. C. Panigrahi, Archaeology of Bhubaneswar, begun in 1952-54.

P. Mukherjee, History of Gajapati kings and their successors, begun in 1950.

Ph. D.

N. K. Sahu, History of Buddhism in Orissa, begun in 1951.

Oriya

Ph. D.

B. Mohanty :

Sarala Mahabharat, for Ph.D., begun in 1952.

Influence of the tribal languages on the Oriya language, begun in 1952, in progress.

Philosophy

S. K. Chattopadhyaya, Object and objectivity, begun in 1953.

G. Parida, Correlation of organismic conception of Mind with Gestalt point of view, begun in 1954.

S. Sahu :

Bengal-Vaisnavism, begun in 1953, completed.

Existentialism of Heidegger and Sartre, begun in 1954.

Samanta Chandra Sekhar College, Puri

Upendra Misra, History of Oriya Novels, begun in 1953.

Ph. D.

Hiralal Debnath, Concept of unconscious in Freudian Psychoanalysis.

Nanda Kishore Mishra, Graham Green and the religious Novel of the 20th Century, begun in 1953.

Atasi Kumar Ray, Local Self Government in India with special reference to Orissa, begun in April, 1954.

Subodh Kumar Nanda :

Madhya theory of knowledge, begun in 1952.

Comparative study in mysticism, begun in 1952.

Mrutunjaya Mohapatra, Post-war pattern of Industrial Trade in India, begun in 1954.

Rama Chandra Mohanty, Pressure groups in India, begun in March, 1954.

Krishna Chandra Mishra, (Khanhu Charan Mishra) Agam in early Oriya Literature, begun in March, 1954.

D. Litt.

K. V. Rao :

Indian constitution, begun in 1950.

Provincial Autonomy and Federal Finance, begun in 1954.

VISVA – BHARATI

Sanskrit, Pali and Linguistics

Dr. Siddheswar Bhattacharya, Philosophy of Bhagavata-Purana.

Sukhamaya Bhattacharya :

Tantraparichaya and Vaisheshika-Darshan.

Tantralokha of Abhinavagupta.

Biswanath Bandyapadhyaya, Philosophy and History of the Kalacakra School of Buddhism.

Miss Samyukta Gupta, Neo-Vedantic movement with special reference to Madhusudan Saraswati.

Dwijendranath Basu, Bengali Syntax with reference to its analytical aspects.

Bengali

Prabodh Chandra Sen, Reader and Head of the Department, Rabindranath's interpretation of Indian socio-religious ideals and also on Rabindranath's metrical art.

Satyendranath Ghosal, completed his study of the first Muslim author of Bengali literature—Daulat Kazi (1622).

Panchanan Mandal, has published a volume entitled Chithipatre Samaj-chitra containing a critical and classified collection of old letters.

Amitabha Chaudhuri, Madhvasangita on the basis of a manuscript discovered in Orissa.

Sukhamay Mukhopadhyaya, Bengali translation of the Bhagavata Purana on the basis of a manuscript discovered from Orissa.

Oriya Studies

Kunja Behari Das, completed his work on the Palligiti Sanchayan, Lokagiti and Kahani, A study of the Folk-songs and Folk-lore of Orissa.

Narendranath Mishra, Dandi-Ramayana of Balaram Das.

Hindi Studies

Rampujan Tewari, completed his studies on Sufism and prepared a book on the Sufi and Santa movements of India.

Indian History and Culture

Dr. Sudhakar Chatterji, Sakas in India and undertook fresh research on the Political History of Northern India (c. 550 to c. 970) with special reference to the History of Kashmir.

Haridas Mitra, Mudra or Gestures as depicted in literature and sculpture.

Kalyan Kumar Sarkar, North Indian Cultural influences in ancient Indo-China with special reference to Art, Religion and Paleography.

Krishnamohan Verma, Indian Canons of Iconometry with special reference to the works : Pratimalaksana, Buddhapratimalaksana, Sukranitisara, Brhatsamhita and Manasollasa. He also worked on an important problem of Indian Aesthetics : Sattvikabhinaya and its significance and prepared a considerable monograph for publication.

Philosophy

K. A. Venkataramanan, Study of the Buddhist Sammitiya Philosophy which was published ; Philosophy of Nagarjuna based on Sanskrit and Chinese sources.

Prabhasjivan Chaudhuri, completed his study of Aesthetics, his book entitled Comparative Aesthetics was published.

Islamic

Dr. F. M. Asiri, Studies in Urdu Literature sent to the Press.

Chinese

Aiyaswami Sastri, completed his translation of Dvadasamukha-Sastra of Nagarjuna and continued his study and translation of Satyasiddhi-Sastra of Harivarman.

Sujit Mukhopadhyaya, was engaged in the preparation of a critical edition of some of the Avadanas from Divyavadana and studied the relevant Chinese materials for it.

Shanti Bhiksu Sastri, completed his translation of the Abhidharmamrita of Ghosaka which was published. He, besides, continued his stupendous work of translation of Jnanaprasthana-Sastra, the fundamental work of Buddhist Psychology of the Sarvastivada school now lost in original but preserved in Chinese translation. Nearly one-third of the work was completed.

English

Prof. Roy B. Noth, carried on research in the Development of the English Novel. He was engaged in writing a book dealing with seven modern English Novelists : George Orwell, Graham G. Greene, Aldous Huxley, H. E. Bates, Evelyn Vaugh, Joyce Cary and Nigel Balchin. He was also engaged in a comprehensive study of the Development of the English Novel from its beginning up to 1832.

**The following is a list of publications which appeared in
print from July, 1952 to June, 1954.**

Visva-Bharati Series

Sukhamaya Bhattacharya Sastri, Jaiminiya Nyayamalavistara.

B. J. Hasrat, Dara Shikuh, Life and Works.

Visva-Bharati Studies

Dr. J. C. Tavadia, Indo-Iranian Studies II.

Kunjabehari Das, A Study of Orissan Folk-lore.

Shanti Bhikshu Sastri, Abhidharmamrta of Ghosaka.

Pravasjivan Choudhury, Studies in Comparative Aesthetics.

Fazl Mahmud Asiri, Studies in Urdu Literature.

Bengali Works

Panchanan Mandal, Chithipatre Samaj Chitra.

Sukhamaya Sastri, Tantra-parichaya.

Prabodh C. Sen :

Banglar Itihas Sadhana.

Dhammapada Parichaya.

Nripendra Chandra Bhattacharya, Banglar Arthanaitik Itihas.

Bimal Kumar Datta, Granthagara.

Prabodh Chandra Bagchi, Baudhdha-dharma.

Santidev Ghosh, Java O Balidwiper Nritya.

Oriya Works

Chittaranjan Das, Odisara Mahimadharina.

Kunjabehari Das, Palligiti Sanchayan.

Hindi Works

Shiva Nath, Bharatendu-Yugina Nibandha.

RESEARCH INSTITUTES

BHANDARKAR ORIENTAL RESEARCH INSTITUTE

(Post Graduate & Research Department)

Poona University

Sanskrit

Prin. R. D. Karmarkar :

Gaudapāḍakarikā with complete translation into English, Notes and Introduction and Appendices pp. LII + 157, 1953, published at B.O.R. Institute.

Abhijnāna-Śākuntala with complete translation into English, Critical and explanatory Notes. Introduction and Appendices pp. LXVII + 404 (1952), published at Aryabhushana Press, Poona-4.

Uttarāramacharita, with a complete translation into English, critical and explanatory Notes, Introduction and Appendices, pp. XXXI+312 (1954), published at Aryabhushana Press, Poona-4.

Press-copy of Arjunopākhyāna is being prepared.

Press-copy of Uttaragītā is being prepared.

Press-copy of the Aśvamedhikaparvan in the critical edition of the Mahābhārata is being prepared.

Presidential address at the Classical Section of the Oriental Conference held at Ahmedabad.

The Pāriplava (revolving cycle of legends) of the Aśvamedha, published in Annals, Vol. XXXIII, 1953. (B.O.R.I.).

Puṣpitā vāk in the Bhagavadgītā, published in Annals, Vol. XXXII, 1952.

Dvipadām vara in Gaudapāḍakārikā (IV.1), published in Annals, Vol. XXXII, 1952.

Papers read at the Oriental Conference but not yet published :

The dramatic terms : viśkambhaka, and Praveśaka ; Janāntikam and Apavārya.

The authorship of the Pārvatī parinaya.

Yogavāsishtha, Lankāvatāra and Gaudapāḍakārikās—mutual relations.

Was Śankara the author of the commentary of Gaudapāḍakārikās generally attributed to him.

Ph.D.

Miss Sulochana Nachane, Brief survey of Poet Sankara Vedānta, secured degree in 1953.

M. T. Sahasrabuddhe, A Survey of Pre-Śankara Vedānta, secured degree in 1954.

Mrs. M. Gokhale, Miscellaneous works of Sankara, thesis will be submitted shortly.

- Mrs. S. Oka, Gītā Literature, thesis will be submitted shortly.
 Miss Kusum Ketkar, Humour in Sanskrit Literature.
 V. P. Mahajan, Ksemendra : author study, secured degree in 1954.
 C. R. Deshpande, Campu Literature.
 V. T. Zambare, Rājaśekhara and his works.
 M. G. Kothari, Critical study of Tattvārthas' lokavārttika.

FOREIGN STUDENTS WORKING AT THE INSTITUTE

- Prof. H. Kimura, Works of Kālidāsa & Japanese Literature.
 Y. Ojihara, Classical Sanskrit Literature.
 J. Takasaki, Vedānta & Buddhism.
 H. Kitagawa, Rāmānuja's Bhāṣya.
 Dr. Yarrow, Meghaduta.
 Dr. Daniel H. H. Ingalls, Works of Philosophy.
 Irwin S. Chakman.
 Dr. Patzig.
 Johan D. M. Derrett.

Sanskrit and Ancient Indian Culture

Dr. P. K. Gode.:

- Pākārṇava, an anonymous medical work and its date—Between Circa A.D. 1650 and 1800, published in Poona Orientalist.
 Rasakāmadhenu, a work on Alchemy by Cūda-manimīśra and its date—Between A.D. 1500 and 1700, published in Annals B.O.R.I. Vol. XXXII.
 History of Wax-candles in India—A.D. 1500-1900, published in Annals, B.O.R.I., Vol. XXXII.
 The use of cloth for letter-writing at Harśa's Court—A.D. 606-647, published in Prof. M. Hiriyanna Commemoration Volume.
 Presidential Address as President of the section of Technical Sciences and Fine Arts of the Darbhanga Session of the All India Oriental Conference, published by A.I.O.C., Darbhanga.
 Authorship and Antiquity of a stanza with paleographic imagery in the Text of the Mahimnastotra, published in Bharatiya Vidya, Bombay.
 Chronology of Dharmapradīpa and Bhojavayākarna composed under the patronage of Rao Bhojaraj of Kachha—A.D. 1631-1645, published in Poona Orientalist.
 Perfumes and cosmetics in India used in the royal bath circa A.D. 1130, published in The International Perfumer, England.
 History of Fireworks in India from circa A.D. 1400-1900, published by Indian Institute of Culture, Bangalore.
 Date of Keśavabhatta of Puṇyastambha, the author of Nṛsimhacampū and other works—between circa A.D. 1450 and 1575, published in Swami Kevalanand Commemoration Volume.
 History of Fenugreek and Alfalfa (Lucerne) in India and other countries between C.B.C. 700 and A.D. 1800, published in Annals B.O.R.I., Vol. XXXIII.
 Jayakṛṣṇa Mauni, the Author of Tarkacandrikā and other works, between C. A.D. 1725 and 1760, published in Oriental Institute, Baroda, Vol. II, No. 3.

Date of Sabhāvinoda of Daivajna Dāmodara, a protege of King Śrīnī-vasa Malla of Nepal—between A.D. 1657 and 1760, published in *Prācyavāṇī*, Calcutta, Vol. X.

A rare Manuscript of a commentary on the *Siddhantakaumudī* called *Līlāvātī* by *Mīmāṃsaka* Giridhara, published in *Poona University Journal*, Vol. I, No. 1.

Date of *Mitabhāṣiṇī*, a commentary by *Mādhava Sarasvatī* on the *Saptapadārthī* of *Śivāditya*, between A.D. 1050 and 1300, published in *Journal of Oriental Research*, Madras, Vol. XXI, Pts. 1-4.

Poetical works of *Somanātha Sakalakala* of *Yamalagrāma*, before A.D. 1750, published in *Journal of University of Gauhati*, Vol. IV.

Studies in Indian Literary History, Vol. I (about 570 pages), about 75 articles with Indices, published in *Singhi Jain Series*, No. 37.

Studies in Indian Literary History, Vol. II (about 560 pages), 57 articles with Indices, published in *Singhi Jain Series*, No. 38.

S. K. Dikshit :

The Problem of the *Kuṣāṇas* and the Origin of the *Vikrama Samvat*, published in *Annals*, B.O.R.I., Vols. XXXIII - XXXIV

Engaged in *Mahābhārata* Epilogue work.

Prof. D. B. Diskalkar :

Engaged in *Mahābhārata* Epilogue work.

Antiquity of the title “*Mahāmahopādhyāya*”, published in *Annals* B.O.R.I., Vol. XXXIV.

Working on :

Royal families claiming descent from *Mahābhārata* heroes.

India's contact with Western Asia in Second millennium as known from *Mahābhārata*.

Sanskrit authors who borrowed from *Mahābhārata*.

BOSE INSTITUTE, CALCUTTA

Chemistry

D. Phil

- Banerjee, Ajit Kumar, Chemical investigation of plant products, begun in August, 1954.
- Chakraborty, Debiprosad, Investigation in plant chemistry including the chemistry of the irritability principle of *Mimosa pudica* linn, begun in May, 1954.
- Chakraborty, Sachindra, Chemical investigation of plant and plant products, begun in January, 1955.
- Dutta, Jyotirmoy, Physical & Chemical studies of biological materials with special reference to plants, begun in September, 1954.
- Ghosh, Chandrachur, Isolation and investigation of natural plant products, begun in August, 1954.
- Sen, A., Electrophoresis of proteins Isolation of plant proteins from seeds, begun in June, 1952.
- Venkateswara Rao, K., Isolation and study of the active chemical constituents of plants, begun in September, 1954.

Physics

D. Phil

- Dr. M. S. Sinha, Positive-negative ratio of π -mesons at sea-level, begun in 1952, likely to be completed in 1957.
- N S. Das, Investigation on the mean free path of the N-component of Cosmic rays and the study of unstable heavy particles, begun in 1951, likely to be completed in 1957, two papers have been published in the Trans. Bose Res. Institute, in 1954.
- N. N. Biswas, Determination of the mean life and capture probabilities of μ - mesons in different elements, begun in 1952, likely to be completed in 1957, three papers have been published, one in Physical Review, one in Trans. Bose Res. Inst. and one in Ind. Jour. of Physics.
- Srimati N. Basu, Studies on the low energy end of the Cosmic-ray spectrum at sea-level, begun in 1954, likely to be completed in 1957.

D. Sc.

- Dr. S. Chatterjee with I. L. Chakraborty :

Time variation of cosmic ray intensity at sea-level and at high altitude, begun in 1948, likely to be completed in 1956, one paper published in Ind. Jour. of Physics.

Study of Cosmic-ray bursts at sea-level and high altitude, begun in 1948, likely to be completed in 1956.

- A. M. Ghosh and N. K. Ganguly, Studies on the inter-action of gamma-rays and neutrons with matter using the "Scintillation technique", begun in 1948, likely to be completed in 1956.

- A. N. Banerjee :

Construction of neutron generator, begun in 1945, completed in 1954, one paper published in Ind. Jour. of Physics.

Studies in radio-isotopy and Radiometric analysis, begun in 1954, likely to be completed in 1957, one paper published in Science and Culture.

T. C. Bhadra :

Investigation on ultrasonic waves in liquid media, begun in 1948, likely to be completed in 1956, one paper published in Ind. Jour. of Physics.

Studies on para magnetic resonance using micro-waves.

Microbiology

A. K. Mishra, Ultraviolet irradiation studies production of mutants of *A. niger*, and *p. chrysogenum*, begun in January, 1954, likely to be completed in 1956.

M. Purakayastha :

Isolation and purification of *Azotobacter* sp. *Rhizobium* sp. and *nitro-somanas* sp. from legumes and soil samples, begun in September, 1954, likely to be completed in 1955.

Effect of dyestuff on the isolation of micro-organisms, begun in November, 1954, work is in progress.

A. Dasgupta :

A comparative study of aminoacid content of vegetative mycelium and fruit-bodies of *Basidiomycetes*, begun in October, 1954, likely to be completed in 1955.

Study on the isolation of antibiotic substance from a *Streptomyces* sp. begun in September, 1954, likely to be completed in 1955.

A. Banerjee :

Effect of trace elements on growth and antibiotic production of A_{12} and Ac_4 (24), begun in December, 1954, likely to be completed in 1955.

Study on the isolation and purification of A_{12} , begun in December, 1954.

Study on the production of tricarboxylic acids in the metabolite of *Streptomyces* sp. by paper-partition chromatography, begun in November, 1954, likely to be completed in 1955.

S. K. Mukherjee :

Role of antibiotics in soil.

Uptake and translocation of antibiotics in rice Accdrlings, begun in September, 1954, work in progress.

S. B. Bose and G. P. Sen :

Effect of temperature on distribution of a soluble by Craig's apparatus, begun in September, 1954, work completed.

Separation of Raoulscive and Yohmbine alkaloids by counter-current distribution, begun in August, 1954.

G. P. Sen :

Study on the antibiotic activity of *P. vermiculatum*, begun in 1953, likely to be completed in 1955.

Study on the chemistry of A_{12} , begun in October, 1954, likely to be completed in 1955.

Botany

Dr. K. T. Jacob, Cytogenetics and Plant breeding with reference to crop plants, begun in 1941, two papers published in Scientific Journals.

A. K. Adhikary :

Breeding long stapled cotton in West Bengal, begun in 1954, likely to be completed in 1955.

Effects of X-rays in cotton plants, begun in 1952.

A. Guha Thakurta and B. K. Dutt :

Role of auxin on the growth of root, begun in 1943, completed in 1952, submitted for publication in Transactions Bose Research Institute, Calcutta, Vol. 19.

Viability of vegetable seeds in storage, begun in 1945, completed in 1953, submitted for publication in Transactions Bose Research Institute, Calcutta, Vol. 19.

Trugidity variation in the pulvinus of *Mimosa pudica* due to contractile responses, begun in 1952, likely to be completed in 1955.

Study of the diurnal variation of motoexcitability of *Mimosa*, begun in 1954, likely to be completed in 1956.

Sudhansu Kumar Roy, Plant Enzymes, Phosphorylating enzymes of glycolysis in plants, begun in June, 1953, paper communicated in part to the proceedings of 42nd session of Indian Science Congress Association.

Satyabrata Sarkar, Biochemical and Physiological studies in excised plant tissue, begun in August, 1951, likely to be completed in December, 1953, communicated in part to the proceedings of the 41st session of Indian Science Congress Association.

Benoy Krishna Palit :

Title of the paper "Studies on the physiology of cinchona plants grown in plants growth in length of the stem of Cinchona plant in relation to the respiration of its roots", begun in 1951, completed in December, 1952, published in the Transactions of the Bose Research Institute.

Effect of penicillin under different concentrations in international units on % of germination and root growth on seeds of zeamays, Radish, Pea and Lobia Beans, begun in 1953, completed in 1953.

Effect of streptomycin in different concentrations in p.p.m. on several seeds especially on seeds of the N. O. Cruciferae, Family Brassica, namely Calfage, Cauliflower, Kohl Rabi, Radish, Mustard and Turnip, begun in 1954, likely to be completed in 1955.

D. Phil

K. L. Chaudhuri, Effects of X-rays in Sesamum, begun in 1950, likely to be completed in 1956, one paper published in Scientific Journal.

R. K. Basu :

Effects of X-rays in Jute, begun in 1950, likely to be completed in 1955, one paper published in Scientific Journal.

Action of radioisotopes like P^{32} and S^{35} in jute and tomato, begun in 1953.

- A. Das, Effects of X-rays in Mustard, begun in 1950, likely to be completed in 1956, one paper published in Scientific Journal.
- K. George, Weed Control by means of selective herbicides (low lands weeds), begun in 1953, two papers published in Scientific journals.
- M. G. Srivastava :
 Weed Control by means of selective herbicides (high land weeds), begun in 1953.
 Cytological studies in some low land plants.
- D. N. Chakraverti :
 Concentric vascular bundle in some ascidial stalks of *Clerodendron infortunatum* Gaerth, begun in 1951, three papers published in Scientific journals.
 Variations in the morphology of the pistil and stamens of *Sespania Grandiflora* (Linn) Pers.
 A comparative study of the fibre cells in two varieties of *Corchorus olitorius* L.
- U. K. Rai, Cytogenetical studies in Brinjals, begun in 1954.
- Miss Mary Korach, Cytological aspects of sex differentiation and evolution in plants, begun in 1954.
- V. S. Sarma, Cytogenetical investigation in Tomato, begun in 1954.
- Miss Madhuri Dutta, Studies in the biochemistry of Phosphorus in plant, begun in January, 1952, likely to be completed in December, 1955, Part I, on the methods of chromatographic separation of phospho esters and sugars is under preparation for publication.
- Vidyadhar Nilkanta Gadgil, Studies in the Biochemistry of Plant tumours, begun in March, 1952, likely to be completed in December, 1955.
- Birendra Bejoy Biswas, Biochemical and Physiological studies in chlorophyceae and cyanophyceae, begun in May, 1954, likely to be completed in December, 1956.
- Atindriya Bose, Micorfossils as an aid to the determination of sedimentary strata with special reference to the Cambrians of India, begun in 1948, likely to be completed in 1956, published in Proceedings of the Indian Science Congress (1953-54), Proceedings of the International Botanical Congress at Paris (1954), Symposium on Organic Evolution (1954), Proceedings of the National Institute of Sciences of India (in Press).

CENTRAL BUILDING RESEARCH INSTITUTE, ROORKEE, U.P. India

List of Publications

- Gurdas Ram, Moisture Movement and Weathering Properties of Building Materials, published in Journal of the Scientific and Industrial Research, December, 1947, Vol. 6, No. 12, p. 492.
- N. K. Patwardhan, The Need for Soil Stabilization, published in Journal of the Scientific and Industrial Research, May, 1948, Vol. 7, No. 5, pp. 227-229.
- *L. C. Jain, Life-Pozzuolana Mortars, published in Journal of the Scientific and Industrial Research, July, 1948, Vol. 7, No. 7, pp. 317-319.
- N. K. Patwardhan :
Possibilities of Using Earth as a Building Material in India, published in Proc. Indian Science Congress Association, 36th session, held in Allahabad in January, 1949, Part III.
- *On the Use of Lime-Sludge as Stabilizer in Earth Construction, published in Journal of the Scientific and Industrial Research, January, 1949, Vol. 8B, No. 1, pp. 23-24.
- *L. C. Jain, Water Content of Lime-Pozzuolana Mortar, published in Journal of the Scientific and Industrial Research, April, 1949, Vol. 8B, No. 4, p. 78.
- N. K. Patwardhan, Preliminary Investigations on Brick-Clays in India, published in Journal of the Scientific and Industrial Research, August, 1949, Vol. 8B, No. 8, pp. 144-146.
- L. C. Jain, A. F. Chhapgar and Gurdas Ram, Preliminary Investigations on the Physico-Chemical Properties of some Indian Bricks, published in Journal of the Scientific and Industrial Research, September, 1949, Vol. 8B, No. 9, pp. 162-168.
- Dinesh Mohan, Report on Soil Survey at Hindan Air Field, published in B. R. U. Report, 1949 (mimeographed).
- N. K. Patwardhan :
Influence of Physico-Chemical Properties of Brick-Earths on Fired Bricks, published in Proc. Indian Science Congress Association, 37th Session held in Poona in January, 1950, Part III, p. 161.
- *Environmental Factors and Human Comfort, published in Journal of the Scientific and Industrial Research, June, 1950, Vol. 9A, No. 6, pp. 186-187.
- *L. C. Jain, Effect of Salts on the Physical Properties of Soils, published in Journal of the Scientific and Industrial Research, December, 1950, Vol. 9B, No. 12, pp. 301-303.
- *S. K. Chopra and N. K. Patwardhan, Pozzuolanas and Pozzuolanic Cements, published in Indian Concrete Journal, November, 1950, Vol. 24, No. 11, p. 269.

- N. K. Patwardhan, Some Aspects of Research on Indian Bricks and Brick Clays, published in Proc. Indian Science Congress Association, 38th Session held in Bangalore in 1951, Part III, p. 89.
- S. K. Chopra and N. K. Patwardhan, Studies on Brick-Earths, Part II, published in Journal of the Scientific and Industrial Research, January, 1951, Vol. 10B, No. 1, pp. 19-21.
- *L. C. Jain and B. C. Raychaudhuri, Studies on Indian Bricks, published in Journal of the Scientific and Industrial Research, February, 1951, Vol. 10B, No. 2, pp. 41-44.
- *B. C. Raychaudhuri, Comforts and Buildings, published in Science and Culture, November, 1951, Vol. 17, No. 5, pp. 199-202.
- S. K. Chopra and N. K. Patwardhan :
 Investigations on the Use of Lime-Sludge as a Soil Stabilizer, published in Journal of the Scientific and Industrial Research, October, 1952, Vol. 11B, No. 10, pp. 434-437.
 Lime-Sludge from Sugar Factories and Tanneries, Read at a Symposium on Utilization of Industrial Waste held at National Chemical Laboratory, Poona, 1952.
- *S. K. Narayana, S. K. Chopra and B. C. Raychaudhuri, Scientific Principles and their Application in Tropical Building, Design and Construction—A Review, published in Journal of the Scientific and Industrial Research, February, 1953, Vol. 12A, No. 2, pp. 88-92.
- D. P. Ahuja, Foamed Concrete—A Review, published in Journal of the Scientific and Industrial Research, July, 1953, Vol. 12A, No. 7, pp. 331-338.
- *S. K. Chopra, Preliminary Investigations on the Utilization of Sindri Coal Ash as a Building Material, published in Journal of the Scientific and Industrial Research, September, 1953, Vol. 12B, No. 9, pp. 420-424.
- N. K. Patwardhan and K. R. Rao, Exfoliation of Indian Vermiculite, paper read at a Symposium on Mineral Raw Materials and Their Utilization held at New Delhi in October, 1953.
- K. Billig, Corrugated Concrete Shell Structures, published in Proc. Indian Science Congress Association, 41st Session held in Hyderabad, 1954, Part III, p. 313.
- N. K. Patwardhan, Utilization of Indian Vermiculite, published in Proc. Ind. Sc. Congress Association, 41st Session held in Hyderabad, 1954, Part III, p. 313.

The following papers were contributed to the Symposium "Reinforced Concrete in India" held at The Central Building Research Institute, Roorkee, November 11-13, 1953

- C. H. Khadilkar, A Low Heat Cement for River Valley Projects.
- S. K. Chopra, Sindri Coal Ash as a Building Material.
- L. C. Jain, Pozzuolanic Activity of Clays.
- C. H. Khadilkar and D. P. Ahuja, Curing Concrete under Steam at Atmospheric Pressure.
- K. Billig, Twin-Twisted Steel Bars.
- K. R. Rao, Testing Concrete by Sonic and Ultrasonic Methods.
- N. K. Patwardhan and K. R. Rao, Some Characteristics of Mysore Vermiculite.
- C. H. Khadilkar, Hollow Tile Arch Roof.
- Dinesh Mohan, Use of Soil Cement in Civil Engineering Works.

- K. Billig, The C. B. R. I. Shell House.
 L. C. Jain, Clay Building Bricks and Their Properties, Symposium on Ceramic Raw Materials in India held in Banaras, February, 1954.

The following papers were contributed to the United Nations Seminar on "Housing and Community Improvement" held in New Delhi from January 21 to February 17, 1954

- K. Billig, C. B. R. I. Shell Houses.
 Dinesh Mohan, Foundations for Houses.
 C. H. Khadilkar, Hollow Tile Roof Construction.
 L. C. Jain, Common Defects in Building Materials.

Bulletins Published

B. R. U. Bulletin

- *Low Cost Houses, 1949.
 Gurdas Ram and L. C. Jain, A Review.
 N. K. Patwardhan, Possibilities of Earth as a Building Material in India.
 Dinesh Mohan and S. Ramachandra Rao :
 Sun-dried Clay Roofing Tiles.
 Plasters.
 Floors.

C. B. R. I. Bulletins

Vol. 1 - 1953

- *K. Billig, Research and Building Construction in India.
 *N. K. Patwardhan and S. K. Chopra, Present Position of Brick Manufacture in India.
 S. K. Narayana, Materials and Methods of Building in Indian Villages.
 B. C. Raychaudhuri, Thermal Behaviour of Dwellings : Orientation and Efficiency.
 K. Billig :
 Earthquake Resisting Buildings.
 *Corrugated Concrete Shell Structures.

Vol. 2 - 1954

- *S. K. Chopra and N. K. Patwardhan, A Survey on Brick Production in India.
 B. C. Raychaudhuri and L. C. Jain, Bricks from Alluvial Soils. Part I, Some Properties of Brick Earths Around Roorkee. Part II, Effect of the Mechanical Composition of the Brick Earth on the Properties of Fired Bricks.
 *K. Billig, Factors Affecting Productivity in the Construction Industry.
 S. K. Narayana, Rural Housing in India, in Press.
 K. Billig, Ultimate Load Design, in Press.
 N. K. Patwardhan and C. A. Taneja, Durability of Sandstones, in Press.
 Dinesh Mohan :
 Foundations of Expansive Clays.
 A Laboratory Study of Indian Black Cotton Soils.
 L. C. Jain, Bricks from Black Cotton Soils. Part I, Effect of West Grinding of Soils on the Properties of Bricks. Part II, Effect of the Addition of Coal Ash on the Properties of Bricks.
 K. Billig, Building Research in India, 1954, in Press.
 Note : Those marked with (*) are only available.

CENTRAL DRUG RESEARCH INSTITUTE, LUCKNOW

Botany & Pharmacognosy

Indian Pharmaceutical Codex :

Compiled on the lines of British Pharmaceutical Codex by Dr. B. Mukerji, Director, Central Drug Research Institute, Lucknow. The Indian Pharmaceutical Codex consists of monographs on 190 Indigenous Drugs—mostly vegetable but also of animal and other origin, has been published by the Council of Scientific and Industrial Research at a cost of Rs. 12/- per copy. Copies can be had from the Editor, Publications Division, Council of Scientific and Industrial Research, Old Mill Road, New Delhi-2.

Glossary of Indian Medicinal Plants :

The manuscript covering almost all the indigenous medicinal plants, their local names, synonyms, habitat and utility, has been completed and will be available in a printed form in due course.

Handbook of Indigenous Drugs of India :

A book which will be useful for chemists, pharmacologists and clinicians containing all the scientific data on the Indian medicinal plants is being compiled. A number of monographs have already been written up.

Herbarium and its upkeep :

The poisoning of plants and their upkeep is in progress. It has been possible for the authorities to identify a number of medicinal plants referred to from outside agencies.

Medicinal Chemistry

Phytochemistry :

Investigation on a dozen indigenous medicinal plants reputed to be efficacious in various maladies is in progress. A method for commercial exploitation of 'hayatin' an alkaloid isolated earlier from *Cissampelos pareira* (Zakhmi-hayat) is being devised.

Work on *Coccinia Indica* Wight and Arn (Bhimb) and *Rivea Cuneta* (Kallangida)-drugs reputed to possess antidiabetic properties is in progress.

Synthetic Chemistry :

Several bishonium compounds, methoxy quinolines, and variously substituted sulfides, sulfoxides and sulphones have been prepared as potential neuromuscular blocking agents, Amoebicidal agents and antimycobacterial agents, respectively.

Biochemistry

Enzyme inhibition studies and elucidation of the mode of action of antibiotics :

Dihydrostreptomycin and terramycin inhibited kidney alkaline phosphates whereas aureomycin activated enzyme. Inhibition by terramycin was found to be of the competitive type. Magnesium protects the enzyme from inhibition by dihydrostreptomycin and terramycin. Aureomycin prevents the inactivation of the enzyme by sodium cyanide.

Aureomycin, Chloromycetin, dihydrostreptomycin, penicillin and terramycin were found to inhibit rat liver arginase. The inhibition was in all cases reversible by Mn^{++} or Ca^{++} ions. The inhibition of the enzyme by aureomycin and terramycin was of the competitive type with respect to substrate concentration.

Antibiotics :

Search for antibiotics in soil samples has been continued. The product obtained from a mould locally isolated is being tried as an ointment for tropical ulcers. For comparison of the effectiveness of the product, ointments made out of sulpha drugs, penicillin, terramycin and chloromycetin are being used under identical conditions.

Vitamin B₁₂ :

About 200 strains of antinomycetes derived from Indian soil samples were screened for their ability to produce this important vitamin. Some of the strains indicated potential use as a producer of this vitamin and these are being followed up.

To study the function of vitamin B₁₂ in various living processes, its effect was investigated on a bacterium which is known to require the vitamin for growth. It was found that this organism was inhibited by substances like phenylhydrazine, molybdenum, tungsten which are known to produce anaemia. This inhibition of growth was prevented by addition of vitamin B₁₂.

Vitamin B₁₂ when added to growing cultures of bacteria was found to reduce the amount of vitamin B₁ produced by them.

Mode of action of Drugs :

The final stages of respiration are very important for bacteria, since it is known that the organism derives energy for growth and reproduction from this stage. It has been found that some of the antibiotics in common use interfere with the terminal respiration of disease causing bacteria.

Enzyme make-up of bacteria :

Work on Vibrios has been continued on this important aspect. The bacteria which cause plague have also been taken up for similar enzyme studies.

Chromatography :

Using a modified method (shifting the position of the wick from the centre to a point as near the periphery disc as possible), better separations have been obtained with the 18cm. diameter, filter paper disc by a single irrigation thus saving time and material.

Microbiology & Parasitology

Tropical Pulmonary Eosinophilia :

Electron microscopy has shown the presence of particles which seem to be attached to serum reacted Cell membrane surface and also those which are free in the supernatant fluid. On the other hand no such particles are observed in the supernatant or on the Cell surfaces reacted with normal serum.

Experimental tuberculosis and Chemotherapy :

Preliminary trials in guinea pigs of two sulphones gave anti-tubercular activity comparable to Isonicotinic acid hydrazide and D. D. S.

Bacteriophage :

Two bacterial viruses have been isolated from stools of patients of Colitis, one producing big and another small plaques on *Escherichia Coli*. The big plaque producing virus undergoes mutation to become small plaque producing virus in its passage through *Shigella shiga*. Both the viruses are capable of lysing *Eberthella typhi* and *Shigella shiga*.

Trachoma Virus :

Inclusion positive material from trachoma patient when inoculated into egg was found to produce lesion on Chorioallantoic membrane consisting of white lines and white patches. Inclusion bodies have also been demonstrated in the epithelial Cells of the Chorioallantoic membrane and the conjunctiva of the embryo. Studies in the multiplication of the trachoma virus by means of complement fixation are in progress.

Intestinal microbiology :

Amoebiasis :

Two of the oxyquinolines synthesised in this Institute have shown amoebicidal activity in *in-vitro*.

Pharmacology & Chemotherapy

Neuro-muscular blocking effect of Conessine methiodide is in progress.

Study of the influence of hyperglycaemic glycogenolytic factor (HGF) on glycogenolysis in skin : It is observed that the nature and site of action are the same in skin as in liver.

Studies on the effect of testosterone propionate on glycogen content and histopathology of the liver of experimental hypothyroid rats have shown that the testoid exerts a curative effect on the diseased liver and reduces the enhanced glycogen content in a significant manner.

Studies on the effect of ACTH on the adrenals of thyroxine treated rats have demonstrated that these glands can respond to a superimposed stress inspite of a prior physiological demand imposed on them by the thyroid hormone.

Studies on the influence of melanophore hormone on the adrenals of hypophysectomised rats have shown that the hormone lowers the ascorbic acid content of the adrenals 24 hours after the operation. The loss of

adrenal weight or histochemical alteration consequent upon hypophysectomy however, are not influenced by melanophore hormone.

Studies on the anthelmintic properties of acetyl saponin from *Anagallis arvensis* Linn. It is found to possess marked teenicidal activity in contrast to lack of effect on round worms.

Experimental Medicine

Experimental atherosclerosis :

Blood cholesterol showed slight increase in healthy rabbits after feeding for a month with cotton seed oil, coconut oil and groundnut oil. No atheroma or other lesion was noticeable in the arteries.

Sulphones in Experimental tuberculosis :

A number of sulphones have been screened for their antitubercular activity *in vivo* and two of them, found to be promising, are under detailed study.

Experimental Diabetes mellitus :

Detailed metabolism in animals in which diabetic condition has improved or disappeared from *Coccinia indica* (Bhimb) treatment is in progress.

Studies in Leucoderma :

Isolation, biometry, and establishment of dendritic cell system in the human skin have been completed.

Effect of administration of different sugars on blood glutathione and its relation to experimental diabetes has been taken up.

CENTRAL GLASS & CERAMIC RESEARCH INSTITUTE, CALCUTTA-32

(Investigations carried out between June, 1952 to December, 1954)

Survey and examination of Indian clays. About 300 samples of clay from different localities in India investigated.

Study of clays treated with organic matter.

Fundamental studies of Indian clays. Ion exchange studies etc.

A study of the production of "Technical porcelain" from indigenous raw materials.

Investigations in the manufacture of 'Spark-Plugs'.

Study in the production of 'Ceramic Colours'.

Production of 'foam glass' (completed).

Production of red bangles without the use of selenium as the colourant.

Study in the production of traffic signal lenses.

Study of the colours produced by copper in glass.

Study in the use of Didwana salt cake in glass.

Study of glass container suitable for fruit preservation, mineral water, medicinal and pharmaceutical preparation, spirit chloroform and distilled water, etc.

Study in the production of enamelled wire wound resistors.

Studies in the production of (i) boron free enamels, (ii) pink enamels, (iii) non-ferrous enamel.

Investigations in the utilisation of waste mica.

Properties of Indian talcs.

Use of sillimanite as refractories.

Development of hot face insulating bricks.

Effects of forming methods on glass house refractories.

A study in the production of dental porcelain from indigenous raw materials.

A study of the ferro-phosphate complexes in glass and in liquid solutions.

Investigation of the manufacture of plaster of paris from Indian gypsum.

Investigation into glass moulds.

A study of the durability of boro-silicate glasses.

Survey and examination of glass sands. Glass sands from various localities in India investigated for ascertaining usefulness and improvement for use in the manufacture of glass.

A study in titania glasses.

A study in the production of amber glass.

Better class saggars.

Articles Published (1952-54)

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On the suitability of Indian made Glass Containers, published in *Indian Pharmacist*, **7**, No. 10, 1952.

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**CENTRAL LEATHER RESEARCH INSTITUTE,
MADRAS-20**

Ph. D.

- E. C. Mathew, Investigation on some of the Indian Tanning Materials, begun in January, 1952.
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- P. S. Venkatachalam, Studies on Semi-Chrome Tanning, begun in January, 1953.
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CENTRAL RESEARCH INSTITUTE, KASauli

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Observations on Cholera Vaccine, published in I. J. M. R., Vol. 36, 1948.

A brief note on mouse breeding, published in I. J. M. R., Vol. 38, 1950.

A note on the antigenic relationship to *V. cholerae* of the so called 'A' type of vibrio (Burrows) and 'B' type of vibrio (Gallut), published in I. J. M. R., Vol. 38, 1950.

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- A note on the Anti-tubercular Activity of T.B. 1/698 or "Tibione" (P-Acetylamino Benzaldehyde Thiosemicarbazone) in Experimental Tuberculosis in Guinea-pigs, published in I. J. M. R., Vol. 40, p. 131, 1952.
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- Dudani, A. T., Use of Guinea-pig Serum for Identification of Rough Strains of *Vibrio cholerae*, published in I. J. M. R., Vol. 43, 1955.
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CENTRAL ROAD RESEARCH INSTITUTE, OKHLA, DELHI

Investigations on surface dressings :

In the years 1944-46, the Indian Roads Congress, on behalf of the Roads Organisation, formulated special test specifications on surface dressings on several national highways in India. The Roads Organisation of the Ministry of Transport, Government of India, and the Public Works Department collaborated with the Central Road Research Institute in the construction of the Test Track.

Soil Stabilization in Kashmir :

The study of soil stabilization in Kashmir was taken up to advise how the soil in question could be stabilized for the desired use. The special problem was that stabilizers which had to be transported from the plains were not suitable due to the high costs of transportation.

Road signs and signals :

The International Committee of the United Nations Economic and Social Council on road signs and signals suggested certain symbols for signalisation on roads in city traffic areas. A comparative study was carried out on this subject. Some of the suggestions were similar to those finally adopted by the International Committee.

Compaction on alluvial soils :

The study was undertaken to find out the possibility of adopting the techniques developed in an almost identical study at the Road Research Laboratory, Harmondsworth, London, for Indian conditions, especially for the alluvial soils of northern India. The results were published by the Indian Roads Congress.

Design of bullock cart wheel tester :

A wheel tester has been designed and constructed for investigating the durability and economics of various designs of bullock cart wheel axle system. This machine, for which the final attachments are still to be designed, would help in investigating the possibility of improving this type of traction, which is still an important sector of the traffic in India.

Investigations on two runways :

Investigations were carried out on failures of sources of a concrete and a bitumen runway. The reasons responsible for the failures were ascertained and remedies were suggested.

Control of the execution of concrete work :

On various occasions the Institute was entrusted with occasional or continuous control of concrete work involving the testing of concrete cubes. Important construction works have been executed through collaboration with the authorities concerned. Further work of a similar nature is in progress.

Load-bearing capacity for foundations :

The construction of multi-storeyed buildings is now considered a necessity, especially in big cities where the land available is limited.

Investigations in laterites :

This problem was undertaken to find out a particular kind of laterite that can be used for road construction, especially for the construction of water-bound macadam top crust.

Compaction of tensile briquettes :

The Cement and Concrete Sectional Committee of the Indian Standards Institution, while preparing standard specifications for cement, aggregate and concrete, found it necessary to obtain data on different methods of compaction of tensile briquettes. The aim of the investigation was to discover the extent of uniformity of test results obtained by different methods of compaction of tensile briquettes and to arrive at a basic standard method which would eliminate, as far as possible, the "personal factor" and give consistent reproducible results. The compaction was carried out by using Ennore sand, newly declared as standard sand for India.

Failure of a concrete road :

It was observed that certain concrete slabs used in a newly constructed municipal concrete road in the city had disintegrated heavily, while other slabs maintained perfect quality. Investigations were carried out to eliminate the defects.

Studies on the stabilisation of black cotton soils :

With a view to investigate the problem of stabilisation of black cotton soils in India, a proposal was made for classifying them. These soils were assumed to belong to one general group. It has been possible to classify them into three groups, each with clearly defined ranges of properties. This has enabled the problem of stabilisation of black cotton soils to be investigated on a group basis.

Problems completed :

APPLIED RESEARCH

1. Analysis of some sands
2. Soil stabilisation in Kashmir
3. Investigations on a fair weather airstrip
4. Investigations on stone metal in concrete slabs
5. Bituminous surface of a runway
6. Analysis of concrete and constituents
7. Testing of concrete cubes
8. Investigation on load-bearing capacity, Delhi
9. Analysis of mortar
10. Concrete and mortar analysis
11. Concrete analysis for bridges
12. Cutting of samples of road pavings
13. Concrete analysis for hangar
14. Suitability of stone metal
15. Suitability of sand

16. Concrete analysis
17. Cement analysis
18. Investigation on soils
19. Development of a compound for concrete joints
20. Investigation of soils for brick manufacture
21. Analysis of a mineral.
22. Analysis of core samples in bridge foundation
23. Investigation on load-bearing capacity, Chandigarh
24. Control on concrete quality for an aerodrome
25. Suitability of minerals for roads
26. Mechanical soil analysis
27. Control preparation of concrete cubes
28. Suitability of minerals for runway
29. Investigation and testing of mortar
30. Analysis of soil

FUNDAMENTAL RESEARCH

1. Investigation on surface dressings
2. Road signs and signals
3. Compaction of alluvial soils
4. Design of a bullock cart wheel tester
5. Investigation on laterite
6. Investigation on lime
7. Compaction of tensile briquettes in cement testing
8. Design of a concrete mix
9. Failure of a concrete road
10. Classification of Indian black cotton soils
11. Construction of the test track

List of Publications

1952

An examination of black-top surface dressings laid for field tests in 1945 on the Bombay-Delhi road, published in J. Indian Roads Cong., **16**, No. 2.

Some observations on airfield runway surfaces, published in J. Indian Roads Cong., **17**, No. 1.

1953

The compaction of some alluvial soils in India, published in J. Indian Roads Cong., **17**, No. 2.

An investigation on some laterites, published in J. Indian Roads Cong., **18**, No. 1.

Compaction of tensile briquettes in cement testing, published in Bull. Indian Standards Institution, **5**, No. 4.

A suggested classification of black cotton soils of India, published in J. Indian Roads Cong., **18**, No. 2.

FUEL RESEARCH INSTITUTE, JEALGORA

(Investigations completed in 1953-54)

Petrographic composition of South Arcot Lignite.

Comprehensive survey of the Nowrozabad Top and Bottom Seams.

Analysis of survey samples collected from Ramgarh Coalfields.

The physical and chemical survey of coal from the Jambad-Bowla seam in the western part of the Jambad-Kajora-Toposi area.

Upgrading of washery slurry from Jamadoba Washery (TISCO).

Comprehensive study of the washability of Nos. 10 and 11 seams at Ekra Khas Colliery.

Bench scale experiments on fluidised carbonisation.

Controlled drying of lignites in a 2" fluidized column.

Reaction between air and coke in a fluidized bed.

Preliminary experiments on (air-coke) and (CO_2 -coke) reactions in the 2" fluidized bed.

Preliminary investigations on (i) lignite drying in continuously operated fluidized bed, (ii) flow of dense sandwater suspension, and (iii) the cross-draft producer.

Coking properties of samples of raw and washed coals from 3 different collieries of Kanhan Valley Coalfields, M.P.

Coking properties of individual coals and their blends used in Bhowra Coke Plant.

Nature of low-temperature tar from South Arcot Lignite.

Design of a new Grid burner for pulverized coal burning.

Hydrogenation of South Arcot Lignite at 400°C with 5 per cent catalyst for 5 hours.

Laboratory scale investigations at atmospheric pressure with Fe-Cu-catalysts promoted by 15 per cent Al_2O_3 and 0.1 per cent platinised asbestos for the F.T. Synthesis of Hydrocarbons.

Dry gas capacity of Na-cycle of carbion at different relative humidities.

Columnar study of the carbion at the regeneration levels of $1\frac{1}{2}$, 2 and 3 lb./cu. ft., and 4, 5 and $7\frac{1}{2}$ lb./cu. ft.

Studies on the size and shape of coal.

Effect of humidity on oxygen absorption and on the gaseous products evolved during oxidation of coal.

Moisture sorption isotherms at different temperatures for South Arcot Lignite and for Samla coal.

Experiments on the sampling of coal.

Effect of addition of ammonia in the bomb, on the calorific value determination.

The merits of the semi-micro method for the determination of nitrogen proposed by the I. S. O. Technical Committee 26—(Solid Mineral Fuels, Item No. 6, Resolution No. 17, 1951).

Use of pelleted benzoic acid in the determination of thermal capacity of the bomb calorimeter.

Standardisation of sand for use in the caking index tests.

Correction for evaporation in Bomb Calorimetry.

Influence of the size of coal on the determination of making index by B. S. Method.

Determination of phosphorus using the Bomb Calorimeter.

Electrical Conductivity of coal, coke and lignite.

(ITEMS OF RESEARCH TAKEN UP DURING 1953-54 AND TO BE CONTINUED IN 1954-55.)

Geology and Petrology of Coal

Survey carried out at Fuel Research Institute, Jealgora :

Separation and study of spores from Damua Coal (M.P.)

Heavy mineral analysis of Baraker series rocks along Jamunia River.

The effect of "Sclerotoids" (wood destroying fungi) on the rank of coal.

Petrological studies of thin sections of different coals.

Survey carried out at Raniganj Coal Survey Station, F. R. I., Jealgora :

Moisture retaining capacity of coal and its petrographic constituents at different relative humidities.

Survey carried out at Bokaro-Ramgarh-Karanpura Coal Survey Station, Ranchi :

Study of the petrographic constituents of Kargali seam.

Correlation of Murpa, Topa and Kuju seams of the West Bokaro Coal-fields by microscopic study of the spores.

Systematic Survey of Coals

Survey carried out at Jharia Coal Survey Station, F. R. I., Jealgora :

Physical and chemical surveys of Nos. 10 and 11 seams of the Jharia Coalfield.

Extent of oxidation of coal in pillars due to long standing.

Survey carried out at Raniganj Coal Survey Station, F. R. I., Jealgora :

Physical and chemical surveys of Jambad-Bowla seam of the Raniganj Coalfield.

Effect of weathering of Jambad-Bowla seam coal.

Survey carried out at Bokaro-Ramgarh-Karanpura Coal Survey Station, Ranchi :

Physical and chemical survey of the Kargali seam.

Survey carried out at Central Indian Coal Survey Stations (work shifted to Bilaspur, in February, 1954) :

Physical and chemical survey of coal from Nowrozabad Top and Bottom seams.

Survey carried out at Assam Coal Survey Station, F. R. I., Jealgora (work taken up in September, 1953) :

Physical and chemical survey of coals from South Khasi Hills.

Distribution of sulphur in Assam coals.

Coal Preparation and Handling

Screening of run-of-mine and Friability Tests on Coal Samples.

Briquetting of Kashmir Lignite.

The use of cyanide tailing as stowing material in gold mines.

Coal Washing

Coal washability studies by the float and sink method.

Froth Flotation :

Use of kerosene and brine mixtures in coal flotation.

Use of kerosene and cresylic acid mixtures in coal flotation.

Flotation of X seam coal from South Bulliary Colliery.

Flotation tests on 'green' and calcined petroleum cokes.

Tests with different coals in the semi-pilot cyclone washer plant of $\frac{1}{2}$ ton per hour capacity.

(a) Size classification of slime from Nundydroog Gold Mines (K.G.F.)

(b) Thickening of a 2 per cent slurry.

Cleaning of coals by the 20" Heavy Medium Cone Separator.

Production of super-clean coal from overall samples of coal from Raniganj and Jharia Coalfields (cyclone washing, froth flotation, chemical treatment, etc.).

Coal Cleaning and classification by Wilfley Table, 6" hydrocyclone, and Hardinge Separator.

Statistical Analysis of washability data (Jharia coals).

Statistical study of density of Indian coals.

Investigations on the Washability characteristics of Jambad-Bowla and Satgram seams, Survey carried out at Raniganj Coal Survey Station, F. R. I., Jealgora.

Washability of coal from Kargali seam at Joint Bokaro and Dhori Collieries, Survey carried out at Bokaro-Ramgarh-Karanpura Coal Survey Station, Ranchi.

The possibility of avoiding middlings during washing of the Kargali seam coal at Sawang Colliery, survey carried out at Bokaro-Ramgarh-Karanpura Coal Survey Station, Ranchi.

Washability of Nowrozabad Top and Bottom seam coals, survey carried out at Central India Coal Survey Station, Bilaspur.

Reduction of Phosphorus in Coal Washing, Survey carried out at Jharia Coal Survey Station, F. R. I., Jealgora.

Carbonisation

Cooking properties of different coals.

Low-Temperature Carbonisation of South Arcot Lignite, Assam coal, middlings from the X and XI seam coals (Jharia field), and Raniganj coals, and the examination of tar and by-products.

High-Temperature Carbonisation of Assam, Raniganj and Bokaro coal, and raw and washed Bhowra X seam coal and their blends with M.P. Coals (Kanhana Valley).

Blending of high and low-volatile coals.

Correlation of the Haven Stability Factor with British Abrasion Index.

The plastic properties of coals and vitrains.

By-Products: Coal Tar

Separation of phenanthrene from coal tar and its oxidation to phthalic anhydride.

Oxidation of neutral coal tar oil and coal tar pitches to phthalic anhydride.

Characterisation of low-temperature tar of Assam and Raniganj coals and South Arcot lignite.

Fluidisation

Fluidised carbonisation of coal at low-temperature.

Fundamental studies on fluidisation.

Gasification

Gasification of different coals and cokes in the central-draft producer.

Fluidised gasification of chars.

Cracking of kerosene oil to obtain gas of high calorific value.

Combustion Engineering

Behaviour of high-ash Indian coals when fired in powdered form inside a tubular combustor.

Combustion characteristics of coals with different bed moistures.

Combustion efficiency in boiler and other plant.

The effect of combustion on addition of water to coal.

Measurement of fuel-bed temperatures.

Effect of preheating secondary air in the combustion of coal dust.

The performance of a Hammak mill, and the use of the product, without screening, in the fuel burner.

Rapid combustion of powdered fuels.

Design of an experimental slagging type of gas producer.

Effect of size of charge on cinder loss in Cochran Boiler.

The effect of undergrate and overfire steam on boiler performances.

The effect of moisture on the combustion of slack coal.

Synthetic Fuels

A. Fischer-Tropsch Synthesis

- Trial runs in the "Fixed bed reactor" using Fe-Cu-MgO catalyst, at atmospheric and medium pressure.
- Design of a 'fluidised bed reactor' for F. T. Synthesis.
- Study of the activity of iron catalysts in the F. T. Synthesis.
- Mechanism of the F. T. Synthesis.
- Purification of the synthesis gases.
- Design of a F.T. reactor for the production of 5 gallons of oil per day.
- The use of iron catalysts promoted by Al_2O_3 and pt. asbestos.
- Physical and chemical nature of iron catalysts under different conditions of forming and of synthesis.
- Testing of a catalyst prepared from iron-mill scale (Obtained from the Tata Iron and Steel Co. Ltd.).
- F. T. Synthesis in fluidised bed reactor, at atmospheric and medium pressures.
- Hydrogenation of Assam coal in the dry phase using SnS and NH_4Cl catalyst, in the rocking autoclave, and investigations into the nature of the products.
- The effect of different types of agitation on the hydrogenation of coal.

B. Hydrogenation

- Hydrogenation of South Arcot lignite using SnS and NH_4Cl catalyst.
- The reaction mechanism of coal hydrogenation.
- Fabrication of a continuous plant for vapour phase hydrogenation of coal tar and middle oil.
- The use of cobalt molybdate catalyst promoted by Cr_2O_3 in tar hydrogenation.
- Hydrogenation of low-temperature tar in the rocking autoclave using cobalt molybdate and sulphur as catalysts.
- Catalytic hydrogenation of crude Naphtha for the production of Benzene and Toluene.

Miscellaneous Products from Coal

COLLOIDAL FUEL :

- Preparation of colloidal fuel by dispersing solid coal extract in mineral oil.
- Extraction of Jharia and Assam coals with anthracene oil under different conditions of particle size, temperature, time, pressure, etc.
- Designing of a pilot plant for large scale preparation of colloidal fuel.

ION-EXCHANGE COMPOUNDS :

- Comparative study of the sulphonation of Indian coals by the existing method and by the improved method of sulphonation developed by the F. R. I.
- Starvation-regeneration cycle of ion-exchangers.
- Recovery of ammonia from ammoniacal liquor using carbion.
- Replacement of anthracite with coke in the filtration bed for the removal of turbidity in water.

DESICCANTS FROM COAL :

A comparison of the dry gas capacity of the Na-cycle of carbion and silica gel.

PREPARATION OF PROTOSORB FOR CO₂ ABSORPTION :**MONTAN WAX FROM LIGNITE :**

Solvent extraction of South Arcot Lignite, and its tar obtained on low-temperature carbonisation.

SULPHURIC ACID FROM SULPHUR COALS :

Oxidation of sulphur in Assam coal to sulphuric acid with (i) hot air, and (ii) a mixture of steam and air, at different temperatures.

ACTIVE CARBON FROM COALS AND LIGNITES :

Construction of a carbonisation chamber for large scale preparation of active carbon.

HYDROLYSIS OF DEXTRIN AND STARCH :

The effect of surface area and the quantity of carbion used on the rate of hydrolysis.

Setting up of a pilot plant for the hydrolysis of starch, based on column circulation system.

Fundamental Science Related to Coal**HEAT OF WETTING :**

Low-temperature argon adsorption studies on coals.

Correlation of heat wetting of carbonised coals with the temperature of carbonisation, volatile matter, etc.

MOISTURE IN COAL :

Complete sorption-desorption isotherms of coal-water system in the range of 50-100°C.

Sorption of moisture by different rank coals by static and by dynamic methods at different temperatures.

Effect of repeated sorption process on the shape and position of isotherms.

OXIDATION OF COAL :

The production of humic acid by the oxidation of coal.

The use of NO₂ as a catalyst in shortening the time of reaction.

Study of the rate of reaction and the influence of the catalyst in four different reaction tubes simultaneously.

Oxidation of coal in tilting autoclave for the production of humic acid, in the presence O₂ and N₂.

Oxidation in fluidised bed.

The effect of catalysts on the rate of oxidation of coal.

Production of organic acids by pressure oxidation of coal.

MECHANISM OF OXIDATION OF COAL AT LOW-TEMPERATURE :

- The factors responsible for the decrease in the rate of reaction as coal gradually undergoes oxidation in presence of air.
- The mechanism by which moisture promotes oxidation.
- The effect of rate of heating, oxygen flow, and the temperature of drying, on the spontaneous combustion of coal.

COAL CONSTITUTION :

- Chromatographic separation of the neutral coal tar oil with silica gel as the absorbent.
- Development of a method for the characterisation of coal tar oil, hydrogenated oils from coal, etc.
- Rheological properties of coal.

SIZE AND SHAPE OF COAL :

- Determination of surface area, volume, statistical and the Stokes' Diameters of coal particles broken by different methods.
- The rate of settling of irregular particles of coal.
- Counting of small particles using a binocular microscope.
- Study of the size consists of run-of-mine coal from different seams and collieries.
- Study of the particle size distribution in smoke and dust clouds.
- Measurements of 'skin' surface of coal of different screen fractions by the liquid permeability method, air permeability method, hindered settling, and catalytic decomposition of H_2O_2 by silvered surface.

Standardisation - Sampling Testing & Analysis**SAMPLING :**

- Variance of different specific gravity cuts of coal due to sampling.
- Calculation of variance of reduction and of analysis.
- Sampling characteristics of a difficult coal by mixing floats at 1.4 and sinks at 1.5 in definite proportion and studying the variance.
- The minimum weight needed for screen analysis of mixed sizes of coal.
- Designing and fabrication of scoops (5-13 lb.).
- Standard deviation, and coefficient of variation of the scoops.

CALORIMETRY :

- Corrections due to cooling, change in specific heat and evaporation, for different calorimeter bombs.
- Effect of keeping the thermometer bulb in different positions in the water.
- Seasonal variation of water equivalent of the calorimeter.
- Development of a formula to correct for heat losses by evaporation.
- The effect on calorific value of the level of water in the calorimeter vessel.

Determination of phosphorus and chlorine in coal and coke by the bomb calorimeter, Survey carried out at Survey Laboratories.

Effect of calorific value of the addition of 2 drops of ammonia in the bottom of the bomb, survey conducted at the Survey Laboratories.

Determination of calorific value using diesel oil as calorimetric liquid, survey carried out at Raniganj Coal Survey Station, F. R. I., Jealgora.

The effect on calorific value of the dew formation on the outer calorimeter vessel, survey carried out at Bokaro-Ramgarh-Karanpura Coal Survey Station, Ranchi.

Change in the "water equivalent" of the bomb calorimeter with change in experimental temperature, survey carried out at Central India Coal Survey Station, Bilaspur.

Simultaneous determination of phosphorus and calorific value, survey carried out at Central India Coal Survey Station, Bilaspur.

New Methods of Analysis and Testing

Survey carried out at Jharia Coal Survey Station, F. R. I., Jealgora :
Estimation of nitrogen in coal.

Survey carried out at Survey Laboratories :

Determination of phosphorus in coal and coke by different methods.

Survey carried out at Jharia Coal Survey Station, F. R. I., Jealgora :
Estimation of CO₂ content in coal by gravimetric method.

Survey carried out at Raniganj Coal Survey Station, F. R. I., Jealgora :
Volumetric determination of sulphur using benzidine hydrochloride and solutions of known sulphur content.
Determination of chlorine by different methods.

Survey carried out at Bokaro-Ramgarh-Karanpura Coal Survey Station, Ranchi :

Influence of iron pyrites on the determination of phosphorus in coal.

Comparison of Badami-Whitaker method with Standard B. S. method for nitrogen determination in coal and coke.

Survey carried out at Central India Coal Survey Station, Bilaspur :

Nitrogen determination using a modified Markham steam distillation apparatus.

Effects of high sulphur in coal on volatile matter determination.

Determination of volatile matter of non-caking coals by pellet method.

Preparation of standard sand from indigenous sources for determination of caking index of coal.

Determination of British Swelling Index of coals using an electric cone heater.

Versenate titration method for the determination of total hardness and magnesium hardness of water.

Analysis of water using the 'Drop Count Water Tester'.

Rapid method for the analysis of boiler feed water.

Direct determination of oxygen in coal.

Survey carried out at Bokaro-Ramgarh-Karanpura Coal Survey Station, Ranchi :

Determination of water of hydration of foreign matter associated with Kargali coal by the oxidation of coaly matter.

Development of formulae correlating the results of proximate analyses and other properties of coal.

The separation and estimation of paraffin wax in the low temperature tar of lignites.

Process for the estimation of sulphur in the gas.

Physical Methods

Absorption spectra of coal tar fractions.

Spectrum analysis of coal ash.

X-ray study of washability fractions of Nowrozabad coal.

Structure of coal in relation to graphite.

X-ray study of Fischer-Tropsch Catalysts.

Relationship between electrical conductivity and heat of wetting.

Publications, 1952

Utilization survey of Bermo Seam at Kargali and Dhori, published jointly by the F. R. I. and D. V. C., 1952.

Preliminary Survey of Madhya Pradesh Coals, 1952, published by F. R. I.

Rao, H. S., Basu, A. N., Lahiri, A., The Nature of Coal Bitumens—Viscosity and molecular Weight of Coal Degradation Products, published in J. S. I. R., Vol. 11B, No. 6, June, 1952.

Puri, R. P., Treatment of Boiler Feed Water, paper read at the Symposium on Coal Utilization, F. R. I., March, 1952, published in J. S. I. R., Vol. 11A, No. 9, September, 1952.

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Lahiri, K. C. and Basu, T. N., Refractive Indices of Vitrain as an Index of Rank of Coal, published in J. S. I. R., Vol. 11B, No. 11, November, 1952.

Guruswamy, S., The Random Breakage of Coal and its Assessment, Paper read at the Symposium on Coal Utilization, F. R. I., March, 1952 ; published in J. S. I. R., Vol. 11B, No. 11, November, 1952.

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Symposia

So far, two symposia, one on "Coal Utilization" and another on "Coal Washing", have been held at the Fuel Research Institute in 1952 and 1953 respectively. Some of the papers presented in the first symposium have since been published elsewhere. Proceedings of the second symposium are under publication.

Papers Read by the F.R.I. staff at Symposium on "Coal Utilization" held in March 1952, at F.R.I.:

J. W. Whitaker and A. Lahiri, Coal and planning of Industries.

G. G. Sarkar, Washability Characteristics of Indian Coals.

S. K. Majumdar and A. Lahiri, Heavy Medium Washing in 20" Cone Separator.

Ranga Raja Rao, G. B. S., Luthra and A. Lahiri, Froth Flotation of certain Indian Coals.

S. Guruswamy, The Breakage of Coal and its Assessment.

M. M. Mehta, Spontaneous Combustion of Indian Coals.

R. P. Puri, Treatment of Boiler Feed Water.

N. N. Das Gupta, The Selection of Coals for Coke Making.
Assessment of the Quality of Coke.

A. K. Das Gupta, K. Y. Shrikande and A. Lahiri, Fluidized Carbonization and its Potentialities.

K. K. Roy, N. G. Basak and J. W. Whitaker, Desulphurisation of High Sulphur Assam Coal by Steam and Industrial Gases.

A. N. Basu and J. M. Bhatnagar, Indian Coal Tars.

A. K. Das Gupta, Role of Oxygen in Gas Making.

N. G. Basak and A. Lahiri, Reaction Mechanism in Fischer-Tropsch Synthesis.

B. S. Subramaniam and N. G. Basak, Iron-Copper-Calcium Oxide Catalysts for the Fischer-Tropsch Synthesis.

K. K. Bhattacharyya and N. G. Basak, Activity of Iron-Catalyst at Atmospheric Pressure in Fischer-Tropsch Synthesis.

Papers presented to Symposium on "Coal Washing" held at F.R.I. in September, 1953.

A. K. Moitra, G. G. Sarkar and A. Lahiri, A Study of the Scope and Limitations of Common Coal Cleaning Units.

A. Lahiri, Coal Cleaning Practice in Japan.

J. N. Majumdar, Washing of Indian Coals with Special Reference to Coking coals.

G. G. Sarkar, Industrial Washability Test.

- A. K. Chakravarty, R. R. Rao, G. G. Sarkar and A. Lahiri, Upgrading of Washery Slurry from the Chance Washing Plant at Jamadoba.
- J. N. Majumdar, Reduction of Sulphur and Phosphorus in Indian Coals on Washing.
- S. Majumdar and A. Lahiri, History of Coal Washing Practice.
- G. G. Sarkar, Evaluation of Efficiency and Overall Performance of Coal Washing Operations.
- G. B. S. Luthra, G. G. Sarkar and A. Lahiri, A Comparative Study on the Use of Some Cheap Reagents in Coal Flotation.
- S. K. Majumdar, S. K. Mitra, G. G. Sarkar and A. Lahiri, The Efficiency of Washing in a 20" Heavy Medium Cone Separator.
- A. K. Chakravarty, G. G. Sarkar and A. Lahiri, A Study of the Operation of 3" Cyclone Coal Washer, installed at the Fuel Research Institute, India.
- N. N. Das Gupta, Washing of Coal for Coking.
- K. C. Lahiri, Petrographic Analysis of Raw and Washed Products — A New Technique.

INDIAN AGRICULTURAL RESEARCH INSTITUTE

- Dr. P. C. Raheja, Soil fertility investigations, begun in 1953-54.
S. Sen, Soil fertility investigations, Different Projects from 1942-43 to 1952-53.
A. R. Khan, Agronomy (Crop husbandry).
J. J. Chandnani, Agronomy (Crop Husbandry), during 1948-54.
Sher Singh, (i) Soil fertility (ii) Agril. Extension, for Ph.D. Degree, begun in 1944-45 and 1950-1954 respectively.
K. P. Misra, Sugarcane Agronomy, begun in 1950-51.
Dr. K. S. Yawalkar, Soil fertility investigations (T. C. M.), begun in 1953-54.
Hukam Singh :
Soil fertility building studies, during 1950-52.
Varietal cum cultural experiment on sweet potato.
S. R. Obhroi :
Phosphatic manures on legumes, during 1949-54.
Mixed cropping, during 1949-54.
Extension work, during 1949-54.
R. T. Gandhi, Agrostology, during 1948-54.
J. C. Sharma, Testing of indigenous and exotic grasses and legumes, begun in 1953.
A. G. Kavitkar, Statistical analysis of long term experimental data, for Assoc. I.A.R.I., begun in 1951.
Daljit Singh, Agricultural Statistics, during 1948-51.
B. P. Mathur, Improved varietal manurial and mixed cropping aspects of sesum and linseed, during 1952-54.

Botany

Assoc. I.A.R.I.

The following Researches were begun in October, 1951 and completed in September, 1952.

- Ahuja, Y. R., Studies in the fertility of autotetraploids of *toria*.
Dhawan, C. L., The inheritance of resistance in wheat.
Joshi, M. G., Inheritance studies in some intervarietal crosses of wheat.
Maduram, G. H., Study on some cultivated varieties of a few genera of Leguminosae with special reference to their range of variation.
Mohanty, H. K. Cytogenetics of some interspecific hybrids in *Triticum*.
Pokhriyal, S. C. *Triticum vavilovi* Jakub., its relationship with other hexaploid species and study of the off types.
Ahuja, Y. R., Studies in the fertility of autotetraploids of *toria*.
Ram Gopal, Studies on the effects of synthetic growth substances on wheat.
Sharma, K. P., Studies in autotetraploid linseed (*Linum usitatissimum* L.) with special reference to their utilization in breeding.

- Vaidya, S. M., Further studies on lodging in wheat : Determination of the most suitable index of lodging under different environmental conditions.
- Vedpathak, D. K., Correlation of characters (Morphological and agronomical) in the different types of pigeon pea (*Cajanus cajan* (L) Milisp).
- Khan, K. A. R., Inheritance studies in F_2 of some varietal crosses in *Linum usitatissimum* L.

The following Researches were begun in October, 1952 and completed in September, 1953.

- Bajpaye, N. K., Inheritance studies in *Linum* species cross, *L. marginale* (A. cunn. Planch) x *L. usitatissimum* L.
- Ghosh, P. N., Cytogenetical studies in the species and species hybrids of *Triticum*.
- Hari, M. N., Studies in autotetraploids of linseed (*Linum usitatissimum* L.)
- Misra, D. N., Lodging in three varieties of wheat in relation to level and time of application of nitrogen.
- Prasadrao, N. G., Cytogenetical studies on pentaploid wheat hybrids.
- Ram Rao, G., A study of the influence of synthetic herbicides on the control of weeds and yield of wheat.
- Roy, N. N., Studies of the Indian collection of maize varieties with special reference to the relationship between yield and other characters.
- Singh, S. P., Studies on drought resistance in wheat.
- Jeswani, L. M., Inheritance studies in varietal crosses in Linseed (*Linum usitatissimum* L.)
- Bhagchandani, P. M., A study of the floral biology and genetic relationships in the genus *Canevalia*.
- Mathur, P. N., Studies on potato sprouts.

Chemistry

Agricultural Chemistry

- Raychaudhuri, S. P., Ghosh, A. B., and Bhure, N. D., Fertilizer value of ammonium chloride and ammonium sulphate nitrate — 1953-54 : Comparative nitrification studies on ammonium sulphate, ammonium chloride and ammonium sulphate nitrate and their response on paddy and wheat crops. Results submitted as Thesis for Associateship I.A.R.I. by Junior Author.
- Idnani, M. A., and Chhibber, R. K., Utilization of wild legumes for green manuring, Study of the chemical composition of leaves and seeds of wild leguminous plants and trees, nitrification of the materials under laboratory conditions and crop response by their application as manures. Results submitted as Thesis for Associateship of I.A.R.I. by Junior Author and published in Science and Culture, Vol. 18, pp. 362-64.
- Idnani, M. A., Ghosh, A. B., and Chhibber, R. K., Fertilizer value of dicalcium phosphate, Started in 1952, Study of the comparative fertilizer value of phosphorus in the forms of dicalcium phosphates, superphosphate and bone meal, alone and in combination with ammonium sulphate and farm yard manure in calcareous and non-calcareous soils on paddy, berseem and wheat crops.

- Idnani, M. A., and Chhibber, R. K., Effect of free phosphoric acid and moisture in superphosphate on physical condition and rotting of bags—1951-52, Studies on the relationship of free moisture with phosphoric acid content in superphosphate and the effect of free phosphoric acid in superphosphate on rotting of Jute bags during storage.
- B. V. Subbiah and G. L. Asija, Rapid estimation of nitrogen in soils—1953-54. The nitrogen fraction obtained by extraction with 0-32% KMnO_4 made alkaline with 2.5% NaOH correlated well with the minerological nitrogen obtained by incubation as well as with the crop responses to nitrogenous fertilizers. Papers on "Soil Testing procedure for the estimation of available nitrogen in soils by alkaline permanganate" and "Correlation with crop response and available nitrogen of soils as estimated by alkaline permanganate" are ready to be communicated for publication.
- S. P. Raychaudhury, B. V., Subbiah, and M. P. Sinha, Studies on red and laterites soils. The rapid soil tests suitable for red and laterites with respect to nitrogen and phosphorus have been worked out. It has been found that nitrogen, the total nitrogen and available nitrogen as obtained by incubation experiments and alkaline permanganate correlated well with crop responses to nitrogenous fertilizers. For phosphate Troughton's method and Bray's method were found to correlate with crop responses. Paper on "Rapid Soil Tests for N and P suitable For Red Or Laterite Soils" ready for publication.
- Acharya, C. N., Jain, S. P., and Jha, J., Building up of soil fertility by phosphatic fertilization of legumes. Study of the increase in nitrogen and organic matter level and microbiological activity of the soil as a result of growing berseem in a rotation of berseem, cowpea, wheat. Part of the work was submitted for the Diploma of Associate I.A.R.I. by J. Jha. Three papers published in the Journal of the Indian Society of Soil Science, Vol. 1 (1953), and Vol. 2 (1954).
- Acharya, C. N., and Jain, S. P., Studies on the ammonifying and nitrifying powers of soils. Comparison of different soil types in respect of their ammonifying and nitrifying powers and extent of nitrification of soil organic matter. Work carried out by S. P. Jain for Diploma of Associateship I.A.R.I. Results published in Journal of Indian Society of Soil Science Vol. 2, (1954).
- Acharya, C. N., and Walunjkar, W. G., Composting of Phosphatic fertilizers. Work started in 1953. When superphosphate, rock phosphate and bone meal were composted with cattle-shed wastes they gave higher yields of crops than a straight application of uncomposted phosphatic fertilizers along with a supplement of farmyard manure. Laboratory experiments showed that the reversion of superphosphate in the soil was reduced by the compost treatment. The solubility of rock phosphate and bone meal were increased by the same treatment.
- Acharya C. N., and Yadav K. L., Chemical composition of the tissues of the wheat plant as indicator of its fertilizer requirements on Delhi soil. Work carried out during 1953-54 for the Diploma of Associateship I.A.R.I. by K. L. Yadav. Critical and optimum levels of N and P in the leaves as well as in the whole plant have been fixed at the tillering and flowering stages, which would prove useful for the application of side dressings of fertilizers to increase crop yields.

- Acharya, C. N., Juneja, P. C., and Misra U. P., Production of combustible gas from cattle-dung and other organic materials. Work started in 1953. Part of the work was submitted for the Diploma of Associateship I.A.R.I. by U. P. Misra. The combustible gases produced by anaerobic decomposition of different organic materials have been analysed and conditions worked out for increased production of gas. A simple model of cowdung gas plant has been designed suitable for village homes.
- B. T. Mulwani and N. R. Datta, Soil moisture tensiometer for measuring moistures under field conditions. Work started in 1952. Completed in 1953. The tensiometer can measure moisture between 8% to 30% for light type soils of the I.A.R.I. Farm. When compared both this and the Rogers tensiometer gave identical results.
- R. V. Tamhane, B. T. Mulwani and N. R. Datta, A comparative study of the behaviour of sandy and loamy soils of I.A.R.I. Farm, under treatment with different doses of lime, green manure and F. Y. M. towards the growth of oats. Started in 1952—completed in 1953. Green manure with loamy soils gave maximum yield and aggregation. 50% to 75% higher yield were obtained with green manuring followed by F.Y.M. and lime treatment later gave 25% and 10% increases respectively over control. Sandy soil was better benefitted by lime application.
- B. T. Mulwani and N. R. Datta, Effect of Green manuring under different doses on soil aggregation under different stages of storing (without crop). Started in 1952 and completed in 1953. Storage of green manure for 2 weeks gave maximum aggregation over 4-6 weeks.
- R. V. Tamhane, B. T. Mulwani and N. R. Datta, Pulversing action of various indigenous (country) ploughs (from different provinces) on soils. Started and completed in 1953.
- N. D. Vyas, Acceleration of Fermentation of green manure, sunhemp, in Delhi soil (1951-52). Laboratory and pot culture experiments suggested that if sunhemp is treated with cowdung emulsion (5%), at the time of burying, its fermentation can be accelerated. The yield of wheat by such treatment was increased by 40% against 27% by the normal method of green manuring.
- N. B. Paul, Activation of Azotobacter (1952-53), Thesis for associate-ship diploma of I.A.R.I. in 1953. Effect of inoculation soil with azotobacter acclimatized in that particular soil under favourable laboratory conditions and in the presence of different energy supplying materials like wheat straw, berseem hay and F.Y.M. on two succeeding crops Marus wheat were studied.
- N. D. Vyas and A. N. Sen, Inoculation of legumes (1952-53). Previous experiments on gram showed that the method of inoculating seed which proved successful in case of berseem had no beneficial effects on grain. Other methods of inoculation viz., inoculation of soil with culture and inoculation of soil with soil from gram growing area were, therefore, examined at Delhi and other stations.
- N. D. Vyas, Modified method of using sunhemp for Manurial purposes (1952-53). The crop of sunhemp is allowed to nature and harvested for the extraction of fibre. The seed produced is returned to the soil,

allowed to germinate and then buried as manure. Additional 7% and 5% increases in the yield of wheat and onion were obtained over the usual method of green manuring sunhemp. A paper published in Proc. 41st Ind. Sci. Cong. (1954) Part III, page 248.

- A. Sen, N. B. Paul, and R. B. Rewari, Production of Fuel Gas from Organic waste materials. Started in 1952. Work is in progress. Production of fuel gas from cattle dung under anaerobic conditions was found to be stimulated by the addition of 1% phosphate materials like tri-chy phosphate, superphosphate, singhbhum phosphate and bonemeal. Paper on Production of combustible gases from cane molasses, published in Science & Culture (1954), Vol. 19, pp. 562-564.
- A. Sen, Studies on the Nitrogen Fixing Flora of the tank silt. Started in 1953. Work is still in progress. Pure culture of Azotobacter were isolated from 22 samples of tank silts. A paper on Studied on Azotobacter from tank silts, published in Proc. 41st. Ind. Sci. Cong. Part III, page 241-42.
- A. Sen, A. N. Sen and R. B. Rewari, Mechanism of nitrogen fixation in Rahar. Started in 1951. Work is still in progress. The roots of Rahar crop do not exhibit the normal nodule formation found in other leguminous crops.
- N. B. Paul and N. A. Sen, Studies on wild leguminous plants. Started in 1952, still in progress. On the basis of characteristics of growth, nitrogen contents and nitrification of green matter for kharif wild legume plants were found suitable for use as green manure crops.
- A. Sen, Studies on sulphate reducing organisms (1952), Presence of sulphate reducing organisms has been detected in 22 samples of tank silts from various sources.
- U. P. Misra and A. Sen, Utilization of Mahua cake as manure (1953-54), Thesis submitted for Associateship diploma of I.A.R.I.

Pedology

- K. V. Satyanarayana and Y. P. Bali (1951-52), Soil and Land Use Survey of villages Papraula, Bakarwala and Mundka in Delhi State, the work was submitted for the associateship diploma of I.A.R.I. in 1952.
- K. V. S. Satyanarayana (1951), Laterites of Kutch.
- K. V. S. Satyanarayana and H. C. Mehta 1952, Physical and Chemical properties of some profiles of Rann of Kutch, the work was submitted for associateship diploma of I.A.R.I. in 1953.
- R. V. Tamhane (1952), Reconnaissance soil survey of the commanded area of Chambal Hydrel Project (Rajasthan).
- R. V. Tamhane (1951), Reclamation of salty lands of I.A.R.I. Farm (Botany Division Area). Beneficial results of the use of gypsum at the rate of two tons per acre.
- R. V. Tamhane and R. K. Chhibber, (1953), Effect of Krilium and other conditioners on Soil Structure.

- K. V. S. Satyanarayana, C. N. Rao and R. K. Chhibber (1953), Soil and land utilisation survey of Little Rann of Kutch, the soil contain high amount of soluble salts. The possibilities of reclaiming about 3 lakh acres is under investigation.

Physical Chemistry

- B. Ramamurthi and D. J. Gupta, Studies on Ionic Exchange equilibrium in clays and clay minerals.
- S. P. Raychaudhuri, B. Ramamurthi and Shiv Kumar, Studies on electro-osmotic properties of clays and precipitates, started in 1952 and completed in 1954. The work was submitted as Thesis for M.Sc. degree of the Panjab University by Shiv Kumar.
- S. P. Raychaudhuri, B. Ramamurthi and O. P. Mehra, Studies on electro-kinetic properties of clays from a normal and an alkaline Delhi soil patches and of pure clay minerals, started in 1952 and completed in 1954, as M.Sc. Thesis, University or Panjab.
- B. Ramamurthi and Shiv Kumar, Relative contribution of clay minerals, free silica and sesquioxides to cation exchange capacity and water holding capacity of Indian soils, started in 1954, the work is in progress.
- B. Ramamurthi and S. P. Jain, Studies on anion exchange capacity of Indian soils, started in 1954, the work is in progress.
- B. Ramamurthi and N. M. Nimgade, Studies on development of saline and alkaline patches on the calcareous soils of Gotanical sub-station, PUSA, started in 1953, completed in 1954. The work has been submitted for Diploma of the Associateship of I.A.R.I.
- B. Ramamurthi and N. M. Guha, Studies on clay humus complexes in relation to the fertility of some Indian soils, work started in 1953 for Diploma of the Associateship of I.A.R.I.

Plant Chemistry

- R. S. Dewan, A. R. S. Kartha and K. C. Gulati, Detection of Adulteration of Ghee, Started in 1951. Papers on Indicator Substances for the detection of Hydrogenated butter, Part I and Part II published in J. Sci. and Ind. Res. 11B, 346 and 12B, 178 respectively.
- A. S. Sethi, A. R. S. Kartha and K. C. Gulati, Determination of quality of oil in small samples of oilseeds, started in 1952, Paper on Rapid estimation of yield and Iodine value of oil in small samples of oil seeds published in Current Science, 22, 266, 1953.
- K. C. Gulati, R. Srinivasan, B. G. Chatterjee and K. G. Choudhuri, Nicotine from tobacco waste, started in 1952, work is in progress. Most of the work has been submitted as Thesis for Diploma of the Associateship of I.A.R.I. by R. Srinivasan. Paper on Determination of Nicotine in tobaccos, published in Proceedings of the Indian Academy of Science, Vol. 37, 1953.

- K. C. Gulati, A. R. S. Kartha, B. G. Chatterjee and R. Narayanan, Organic Thiocyanates, started in 1952. A synthetic insecticide, longifolyl thiocyanoacetate has been prepared from longifolene, a sesquiterpene present in Indian turpentine oil, with promising insecticidal properties.
- K. C. Gulati, A. R. S. Kartha and Inder Singh, Chlorinated Terpenes, started in 1952. Work submitted as Thesis for M.S., degree of Panjab University by Inder Singh.
- K. C. Gulati, A. R. S. Kartha, B. G. Chatterjee and Krishan Kant, Synergists for Insecticides, started in 1950.
- K. C. Gulati, A. R. S. Kartha and R. S. Dewan, Insecticidal formulations, started in 1952. Attempts have been made to produce emulsifiers, carriers and synergists etc., for use in insecticidal formulations from indigenous raw materials.
- N. B. Das, T. D. Biswas and Y. P. Gupta, Amino acid composition of food and feeding stuff, started in 1951. A number of pure strains of wheat, pulses, grasses and legumes have been analysed for their content of amino acids by chromatographic and microbiological methods.
- N. B. Das, T. D. Biswas, R. M. Banerjee, Y. P. Gupta, Rattan Singh and P. K. Dhingra, Chemical composition of pure strains of Indian cereals and pulses.
- N. B. Das and R. M. Banerjee, Utilization of mango seed kernel, started in 1951.
- N. B. Das and T. D. Biswas, Carotene content of food and feeding stuff, started in 1951. Various grasses, legumes and sweet potato samples have been analysed for their content of carotene under different conditions of growth and storage. Amino acid composition of typical Indian soils, started in 1952.

Physics

QUANTITATIVE ESTIMATION MICRO-ELEMENTS BY SPECTROGRAPHIC METHODS

C. Dakshinamurti and S. C. Metha, Cathode layer Arc Technique, 1950.

Papers communicated :

- C. Dakshinamurthi and B. Ramamurthi, The Choice of the Arc Segment suitable for the quantitative estimation of Trace elements by the Cathode layer Arc Technique, published in Proceedings of National Institute of Sciences, 1953.
- C. Dakshinamurti and S. C. Metha, Influence of Arcing material, on the cathode enrichment layer, published in Science, Congress 1954 session.
Direct current Arc Technique, 1952.
- C. Dakshinamurti and Y. V. Kathavate, Lundegardh Technique for the estimation of exchangeable elements, (Na, K, Mn, Ca, Sr and Fe.). The soil is leached with neutral ammonium acetate and a spray is fed in air acetylene flame and the above elements are estimated using Hilger's medium quartz spectrograph.

- C. Dakshinamurti and S. C. Metha, Absorption spectrographic technique. Using Hilger's Intermediate spectrograph and spekker photometers, nicotine, Vitamin A and carotene are being estimated by this technique.
- C. Dakshinamurti and S. C. Metha :
1. Extraction and estimation of nicotine in traces present in tobaccos, tomato grafts, paper read in Science Congress Session, 1954.
 2. Extraction and estimation of nicotine in traces, published in Proceedings of Natural Institute of Sciences, 1954.

Entomology

Ph. D.

- Snehamoy Chatterji, The biology and control of some of the serious pests of stored cereals and pulses in India, begun in July, 1948.
- B. R. Subba Rao, A contribution to our knowledge of the bionomics and some important aspects of morphology of *Lestodryinus pyrrillae* Kieff. (Dryinidae Hymenoptera), a parasite of *Pyrrilla* spp., a serious pest of sugarcane in India, begun in 1952.

INDIAN INSTITUTE OF PHILOSOPHY, AMALNER

Chandrodaya Bhattacharya, Research completed on The Notion of Moral Good, during 1952-53 and 1953-54, research is being done now on The Absolute of Hegel.

Govardhan K. Dave, The Concept of Mâyā, 1954-55.

L. R. Joshi, A Study of God in Buddhism and Jainism, November 1953 to March 1954.

A Comparative study of the Absolute in Sankara and Ramanuja, begun in July, 1954.

Pralhad G. Kulkarni, Plotinus and Shankar, A comparative study, 1953-54. The concept of Mind in Indian Philosophy, 1954-55.

Sudarshan Sharma, Pragmatic view of Truth, 1954-55.

S. M. Chingle, Bhagvad Gita, A comparative study in the interpretations of Shree Shankaracharya and Shree Aurobindo, 1954-55.

INDIAN INSTITUTE OF SCIENCE BANGALORE

Antibiotics

- Dr. P. L. Narasimha Rao, Studies in Antibiotics.
S. Natarajan, Pharmacological studies of indigenous drugs.
K. V. Nageswara Rao, Studies on plant antibiotics—Allin. from *Allium sativum*.
D. Rajagopala Rao, Studies on the antibiotic principle of *Garcinia Morella*—Chemical constitution and biological activity of Gutteiferin, for D.Sc.

Ph. D.

- S. C. L. Verma, Studies on Plant Antibiotics : Investigation on morellin—the antibiotic principle of *Garcinia Morella*.
D. V. Krishna Murthy, Chemical constitution of morellin and its relation to antibacterial activity.

M. Sc.

- B. R. Das, Studies on the mechanism of action of the antibiotics—penicillin and pterygosperma.
Miss S. S. Satwalekar, Studies on Plant antibiotics—Citriodorol, the active principle present in the kino of *Eucalyptus citriodora*.

Blood Coagulation

- N. C. Pillai, Studies on Blood coagulation with particular emphasis on the species specificity of the blood plasma proteins (involved in coagulation process) and the process of blood coagulation in health and disease. A blood anticoagulant from Papaya latex has been isolated and further studies on it are being carried, for Ph.D. degree.

Cellular Biochemistry

- Dr. J. Ganguly, Studies on liver esterases, B₁₂ and protein metabolism and Cellular biochemistry.
S. Krishna Murthy, Studies on Vitamin A esterase from rat-liver and other tissues—its specificity, pH optimum and purification.

Chromatography

- Prof. K. V. Giri, Chromatographic technique, Enzymic synthesis of polysaccharides and oligosaccharides.
Miss Tara Rao, Study of circular paper chromatographic technique and its application to study of nitrogenous constituents of some Indian pulses and biological fluids, for M.Sc. degree.

Cytogenetics

- Dr. M. K. Subramaniam, Studies on cytogenetics of yeasts.

Ph. D.

- S. Duraiswami, Some aspects of the cytology and genetics of yeasts.
 Miss S. Royan, The cytology of a Riboflavin excreting mutant top yeast.
 T. R. Thiagarajan, Studies on the cytology of yeast cells grown as giant colonies.
 A. T. Ganeshan, Cytological studies on some yeasts.

Electrophoresis**Ph. D.**

- A. L. N. Prasad, Isolation of the globulin of the common Indian pulses and their characterisation by electrophoretic measurements. Also electrophoretic studies of other protein and enzymic systems.
 Ravindranath, Physico-chemical studies on the interaction of proteins.

Enzyme Chemistry

- Prof. K. V. Giri, Studies in Enzyme chemistry.

Ph. D.

- K. S. Srinivasan, Studies on the metabolism of *Aspergillus flavus*, and studies on the investigation on the stability of nitrogenous fertilizers in Indian soils with special reference to their availability for cotton.
 Miss K. Saroja, Enzymic studies on the degradation and synthesis of oligo- and polysaccharides.
 R. Venkataraman, Investigation on the carbohydrate and nitrogen metabolism of penicillin producing strains of *penicillium chrysogenum-notatum*.
 V. N. Nigam, Synthesis of oligosaccharides by *Aspergillus flavus*.
 T. Rama Sarma, Studies on enzymes in relation to carbohydrate metabolism in plants.

M. Sc.

- P. R. Krishnaswamy, Biochemical studies on yeasts—I Studies on the enzyme glutamic acid decarboxylase in *Rhodotorula glutinis*, II. and on a riboflavin excreting mutant yeast B.R. 2.
 A. Nagabhushanam, Amino acid composition of certain proteins. Studies on the enzyme system in rat liver which has transglucosidation activity.

Food Nutrition

- Dr. H. R. Cama, Studies on food & nutrition with special reference to fat-soluble vitamins, carotenoids and biochemicals.
 Dr. S. Balasundaram, Studies on food and nutrition with special reference to carotenoids.
 Dr. S. Balakrishnan, Studies on biosynthesis of B vitamins as influenced by dietary factors. A significant observation during the course of the study was the favourable influence of curds on thiamine synthesis.
 T. N. R. Varma, Studies on Vitamin A in fish, for Ph.D. degree
 D. A. Malik, Nutritional studies on groundnut protein.

Nitrogen Metabolism in Plants

- Prof. K. V. Giri, Studies on nitrogen metabolism in plants.
- A. N. Radhakrishnan, Investigations on nitrogen metabolism in plants applying the paper chromatographic technique. For the first time the presence of hydroxy-proline is reported in plants (*Santalum album*).
- Dr. C. S. Vaidynathan, Research project on the metabolism of amino acids especially in plants. A study of the thermal and photochemical degradation of amino acids has been carried out and attempts are being made to ascertain whether these novel reactions will serve as "model systems" and will be simulated in biological systems.

Photochemistry

- Prof. K. V. Giri, Studies on photochemistry.
- Dr. G. D. Kalyankar, Non-enzymatic studies of amino acids and keto acids have been carried out. It was found that in presence of cellulose the amino acids get decarboxylated and some very interesting reactions of amino acids in presence of photosensitizers were found.
- Dr. C. S. Vaidyanathan, Studies on photochemical degradation of amino acids and related compounds.

Protein Chemistry

- Prof. K. V. Giri, Studies on protein chemistry.
- Dr. R. Rajagopalan, Studies on protein nutrition.
- N. Venkataraju, Effect of heat treatment on the nutritive value of edible oils and fats.
- H. N. Bhagavan, Studies on nutritional anaemia — the effect of different proteins on the regeneration of haemoglobin and RBC in rats made anaemic by phenyl hydrazine injections. Also the effect of supplementing B₁₂, folic acid etc., on the regeneration of haemoglobin and RBC.
- P. B. Rama Rao, The problem of heat injury to dietary proteins with special reference to the non-enzymatic browning reaction of proteins is studied. The application of the circular paper chromatographic technique to determine the amino acid losses in the protein as a result of reacting with sugars has been demonstrated, for Ph.D. degree.
- B. R. Baliga, Influence of vitamin B₁₂ on the nutrition value of soya protein, raw and optimally heated, for A.I.I. Sc.

Sanitation Biochemistry

- Dr. S. C. Pillai, Studies on sewage purification.

Ph. D.

- G. J. Mohan Rao, Biochemical studies on the flocculation of sewage. Findings : Certain forms of protozoa known as Vorticellids are useful in sewage purification.
- A. V. S. Prabhakara Rao, Studies on sewage protozoa.
- C. Anandeswara Sastry, Studies on activated sludge and water pollution.

Department of General Chemistry

Physical and General Chemistry

HIGH PRESSURE REACTIONS

- S. Sourirajan, Synthesis of Isovaleric acid by the reaction of n-Butyl alcohol and carbon monoxide in the vapour phase in presence of nickel iodide catalysts at high pressures.
- S. Sourirajan and S. K. Bhattacharya, Synthesis of acetic and propionic acids.
- H. Srikant and K. R. Krishnaswami, High pressure adsorption on synthetic ammonia catalyst.
- V. Srinivasan and K. R. Krishnaswami, Study of catalyst surface.
- V. Ramakrishna, and M. R. A. Rao, Miss A. Aga and M. R. A. Rao, Adsorption of gases on technical catalysts.
- N. Venkataraman, S. K. Bhattacharya and K. R. Krishnaswami, Technical catalytic reactions at atmospheric pressures.
- V. Srinivasan and M. V. C. Sastri, Heterogeneity of catalyst surfaces.
- U. N. Bhrany and M. R. A. Rao, Contact angle studies at the surface of manganese minerals.

COLLOID CHEMISTRY

- N. H. Sivaramkrishnan and M. R. A. Rao, Physico-chemical properties of rubber derivatives.
- M. A. Cohly and M. R. A. Rao, Electrophoretic studies on proteins.

POLAROGRAPHY

- R. S. Phadke, R. S. Subramanya and M. R. A. Rao, The diffusion current and the diffusion co-efficients of o-nitrophenol in ethanol-water mixtures.
- C. S. Ramanathan and R. S. Subramanya, Studies in the diffusion currents and diffusion coefficients of o-iodobenzoic acids in aqueous mixtures of organic solvents.
- N. G. Srinivasa Gopal, R. S. Subramanya and K. R. Krishnaswami, Polarographic estimation of D.D.T.
- R. S. Subramanya :
 Polarography of sodium tetrathionate.
 Polarographic studies of metallic complexes.

ELECTRO-DEPOSITION

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 Dr. U. G. Nayak, *Origanum majorana* leaf oil.
 K. L. Murthy and Dr. Sukh Dev, *Piper cubeba* fruit oil.
 Dr. U. G. Nayak and Dr. B. H. Iyer, Coorg Cardamom oil.
 D. R. Gupta and Dr. M. S. Muthana, Devadari Wood oil.
 Dr. A. Somasekhara Rao and Dr. M. S. Muthana, *Aristolochia indica* root oil.

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- R. C. Vasisth and Dr. M. S. Muthana, Black Dammar Rosin.
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- Dr. Sukh Dev, Stereo-Chemistry.
- M. V. Bhatt, Unit processes in Organic Chemistry (joint lecture to Departments of Organic Chemistry and Chemical Technology & Chemical Engineering).
- Dr. U. G. Nayak, Analytical Organic Chemistry.

LIST OF COLLOQUIA

- K. V. Viswanathan, Substituted Thiocarbamides.
- Dr. A. K. Bose, Conformational Analysis.
- K. Raman, Malaria and Antimalarials.
- Dr. A. Bhati, Some Aspects of Sandalwood Oil Chemistry.
- Dr. (Miss) R. V. Phadke, Syntheses of Heterocyclic Compounds related to Calycanthine.
- G. S. Krishna Rao, Some Investigation on Plant Pigments.
- V. R. Mallikarjuneswara, Amino acids from Silk and Human Hair.
- K. S. Srinivas, Some recent Advances in Synthetic Antimalarials.
- Dr. Emil Schlittler, Quarternary Indole Alkaloids.
- Academician Professor I. N. Nazarov, Acetylene Chemistry.
- Dr. D. K. Banerjee, Synthesis of Non-Aromatic Steroids.
- Dr. B. H. Iyer, Chemistry of Phenyl-dihydroresorcin.

Pharmacology

STUDIES ON THE CHEMOTHERAPY OF TUBERCULOSIS

- Sirsi, M., Use of mouse in experimental tuberculosis.
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Tuberculostatic properties of some natural products.
Vitamin C in experimental tuberculosis.
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Development of the method for the quantitative estimation of amino-acids in the culture filtrate of Mycobacterium Tuberculosis by the circular paper chromatography.
Studies on the nature of drug resistance in the mutants of myco-tuberculosis resistant to PAS, INH and streptomycin.
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- Rama Rao, R., and Ramaswamy, A. S., Nitrogen metabolism and biosynthesis of Nucleic acids.
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STUDIES ON BLOOD AND TISSUE REGENERATION.

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Haemolytic, anaemia in rats—Influence of antibiotics and Vitamin on blood and tissue regeneration.

INVESTIGATIONS ON INDIAN MEDICINAL PLANTS.

- Sarma, T. J., and Sirsi, M., Oestrogen from plants.
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Physics

1. LIGHT SCATTERING & RAMAN EFFECT.

Professor R. S. Krishnan : The scattering of light in fused quartz and its Raman spectrum have been investigated. It includes a study of Brillouin scattering in optical 'A' quality fused quartz. The observed frequency shift intensity are found to be in general agreement with those calculated from the known elastic constants of fused quartz. From the measured depolarisation factors it has been concluded that the scattering in fused quartz is multipolar in character.

Dr. V. Chandrasekharan : The intensities of the Brillouin components in birefringent crystals have been theoretically worked out.

Dr. P. S. Narayanan :

- (i) Raman spectrum of carborundum has been recorded for the first time and the strong line has been attributed to the same mode of oscillation as the one which has been observed in the infrared.
- (ii) From a study of the polarization of the Raman spectrum of rutile for different orientations, it has been concluded that of the six oxygen atoms that surround a Ti atom in rutile two are more strongly bound than the others.

- V. M. Padmanabhan : Raman spectra of crystalline acetates of sodium, magnesium and barium have been studied using λ 2537 and the spectra have been analysed in terms of the known crystal structure and the help of group theoretical methods.
- Dr. (Miss) C. Shanthakumari : Raman spectra of crystalline sulphates of zinc, magnesium and sodium and the data interpreted in the basis of the known symmetry of the SO_4 ion in the lattice and the crystal structure.
- T. S. Krishnan :
- (i) Raman spectrum of crystalline ammonium hydrogen malate has been studied using the ultraviolet technique and the 26 Raman lines observed have been compared with the Raman frequencies of the bonds C-H, C-C, C-OH and OH.
 - (ii) Raman spectrum of crystalline sodium citrate has also been studied by the same method and the 28 Raman lines recorded have been discussed in terms of the constitution of the citrate.
- R. Sreenivasan : Temperature variation of the Raman spectrum of topaz has been investigated in the range 30-450°C.
- B. R. Lakshmanan : Raman effect in the binary liquid system-pyridine-acetic acid—has been using the visible radiations of a mercury arc and the spectra corresponding to different relative concentrations reveal the formation of a complex with the formula $4\text{CH}_3\text{COOH}-\text{C}_5\text{H}_5\text{N}$.

2. COLLOID OPTICS.

- S. R. Sivarajan :
- (i) Measurements on the intensity and polarisation of light scattered by colloidal dye solutions have been utilised to derive information regarding the size, shape and structure of the micelle in these.
 - (ii) Similar accurate measurements on gold sols have been interpreted in terms of Gans' theory.
- N. L. Ramanathan : has investigated the phase reciprocity relation in light scattering by a symmetrical medium having no optical activity and has demonstrated the same experimentally.
- K. Vijayaraghavan and Prof. R. S. Krishnan : have carried out an experimental investigation of the convergence correction in depolarisation measurements in colloid scattering and found that the total and vertical depolarisation factors increase with the angle of convergence irrespective of the nature of the colloid and that the depolarisation factor for incident horizontally polarised light decreases when the particle size is very small.

3. X-RAYS.

- Dr. G. N. Ramachandran, The application of X-rays to the study of metallic structures and other metallurgical problems.
- Dr. P. Gopinath Kartha :
- (i) Correction charts for Lorentz and polarisation factors in anti-equi-inclination photographs to be used when X-ray studies are made of very long needle-shaped crystals using the anti-equi-inclination method of getting Weissenberg photographs.

- (ii) Structure analysis of halogenates of type A $(\text{BO}_3)_2\text{H}_2\text{O}$ viz., Barium chlorate monohydrate and Barium bromate. In both cases the results have been given in detail as well as the electron density map in certain projections.
- (iii) Charts for obtaining geometrical corrections—directly from anti-equi-inclination photographs provide an easy method of obtaining absorption correction.
- (iv) A new method of calculating scale factor in structure analysis has been suggested by which using some known relationships in Fourier theories the scale factor of a set of X-ray reflections can be obtained without the need of an unduly large number of reflections.
- (v) A double Fourier punched card method has been outlined which gives a scheme of utilizing the Hollerith punched card calculating machine for summing a double Fourier series in one step and may be found useful in X-ray crystal structure analysis.

V. M. Padmanabhan :

The space groups of magnesium and sodium acetates have been determined by X-ray methods.

A new method of studying the texture of the body of a crystal and its perfection using the variation of the intensity of X-ray reflection with thickness has been worked out and applied to a study of lithium fluoride, sodium chloride, potassium chloride and magnesium oxide.

Dr. G. N. Ramachandran, The transmission of X-rays at settings near the Bragg angle in relation to the influence of mosaicity and texture has been considered and it has been found that an asymmetric transmission must take place near the Bragg angle.

Dr. S. Ramaseshan and Dr. G. N. Ramachandran :

- (i) The influence of mosaicity on the Bragg reflection of polarised X-rays.
- (ii) Investigation of the degree of perfection of a crystal by means of polarized X-rays. Both the studies provide a new means of investigating crystal texture as well as obtaining and using polarised X-rays.

Y. T. Thathachari and Dr. G. N. Ramachandran, have discussed the combination of X-ray focussing mirrors in a X-ray microscope, the best means of forming a compound X-ray microscope and the geometrical limitations involved.

Y. T. Thathachari, The theory of image formation in a combination of X-ray focussing mirrors has been treated in detail.

4. THERMAL EXPANSION.

A. K. Sreedhar, Thermal expansion of crystals—An accurate experimental measurement of the coefficient of thermal expansion of sugar has been made from liquid air temperature to room temperature. Also, for the first time all the coefficients of thermal expansion of a triclinic crystal viz., copper sulphate have been determined experimentally.

- A. K. Sreedhar and Prof. R. S. Krishnan, Thermal expansion of muscovite mica has been studied from 20 to 400°C using an interferometric technique and an anomaly in the thermal expansion has been found in the region 150 to 250°C.

5. MAGNETIC RESONANCE PHENOMENA

G. Suryan :

- (i) A simple means of stabilizing the field of an electro-magnet has been suggested where it is possible to obtain a field stable to one part in 20,000 or more.
- (ii) A self-quenched super regenerative detector for nuclear magnetic resonance has been described.
- (iii) The theory, experimental details and applications of the synchronous magnetic recorder have been dealt with in detail. The instrument, meant for the extraction of weak periodic signals from noise, has been so designed that a very large improvement in signal to noise ratio becomes possible.

Dr. S. Ramaseshan and G. Suryan, Paramagnetic resonance in some cupric salts has been experimentally studied. Results have been obtained about the magnetic field dependent absorption of the microwave energy (3 cm.) in eleven cupric salts both in the form of single crystals and powder. Single crystals have also been studied in various directions.

6. MAGNETO-OPTICS.

- V. Sivaramakrishnan, The first systematic study of the relation between magneto-optic rotation and optical dispersion of halogen acids and their salts has been made.

7. OPTICAL PROPERTIES OF CRYSTALS.

Dr. P. S. Narayanan, The temperature variation of the refractive index of optical A quality fused quartz has been measured and an anomaly in the vicinity of the α - β transformation temperature of quartz has been found. Also a less conspicuous but a definite anomaly has also been noticed at a temperature nearly coinciding with the known transformation point of cristobalite.

Dr. T. Radhakrishnan and Dr. G. N. Ramachandran, A detailed analysis of the dispersion formulae of solids show that the Sellmeier-Drude formula holds better than Lorentz-Lorenz dispersion formula.

8. DIELECTRIC PROPERTIES.

P. T. Narsimhan :

- (i) Groves and Sugden's method of calculating induced moments has been critically examined.
- (ii) A mathematical extrapolation method for complex dielectric polarisation data has been described using which accurate values of both the dipole moment and relaxation time of molecules can be obtained from measurements employing only one frequency very near the absorption region.
- (iii) A molecular treatment of some pyrazines has also been made.

9. ULTRASONICS.

- C. G. Balachandran, Data concerning the ultrasonic velocities in five binary mixtures have been obtained and the effect of compound formation and association on compressibility has been discussed.

10. RADIO ACTIVITY OF ROCKS & MINERALS.

- Dr. V. S. Venkatasubramanian, With a view to determining the geological age of rocks from measurements on the radio-activity, the radium, thorium contents of rock specimens from Kolar have been made. Also the Rb-Sr method has been applied to the age determination of phlogopites.

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- Dr. G. N. Ramachandran, The transmission of X-rays at settings near the Bragg angle, published in Jour. Appl. Physics, 1952, 23, 510.
- G. Suryan, A simple means of stabilising the field of an electromagnet, published in Jour. Sci. Inst., 1952, 29, 335.
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FERMENTATION TECHNOLOGY

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B. Bheemeshwar, The Biochemical aspects of silk-worm with special reference to metabolism and nutrition, begun in September, 1951, for Ph.D.

Mrs. M. B. Shyamala, Studies on nutrition and metabolism of the silk-worm, *Bombyx mori*. L., for A.I.Sc., begun in April, 1950.

M. H. Bilimoria, Studies on thermoresistant bacilli, for M.Sc. degree, begun in July, 1953.

Dr. B. Ranganathan, Nutritional requirements and amino acid composition of some strains of marine yeasts, begun in December, 1953.

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GOVERNMENT OF INDIA

INDIAN SCHOOL OF MINES & APPLIED GEOLOGY

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Y. K. Agrawal :

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INDIAN STATISTICAL INSTITUTE

D. Phil.

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INSTITUTE OF NUCLEAR PHYSICS, CALCUTTA

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- B. B. Ghatghee, Essential oils, Analytical and synthetic investigation on mono, sesqui, and diterpenes.
- N. C. Sogani, Organo metallic compounds, Separation and estimation of inorganic elements with organic reagents.
- K. D. Pathak, Identification of vegetable oils, different vegetable oils are identified on the basis of their characteristic component.
- V. V. Mhaskar, Cane wax, Bleaching, chemical modification and analysis.
- C. G. Joshi, Anthoxanthins, A method has been developed for the synthesis of flavenes and flavandiols.
- G. T. Gadre, Studies in Pentavalent phosphorus compounds, The studies include the use of hydrochloric acid instead of sulphuric acid, in the manufacture of phosphate fertilizers. Methods for the preparation of Dicalcium phosphate and mixed N-p fertilizers have been worked out. The studies also include the preparation of sodium tripolyphosphate from trisodium phosphate — a by-product available at present in India. Further studies on phosphoric acid and phosphates etc., are in progress.
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- P. S. Aggarwal, Solid state physics, begun in June, 1954.
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- V. V. Kane, Anthoxanthins, Reduction of anthones to xanthenes by LiAlH_4 Hydride.
- V. Damodaran, Studies in the chemistry of Titanium, applied in August, 1954.
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 Copolymerisation behaviour of allyl bromide is under investigation.
- S. D. Gadkary, Polymer chemistry, Solution Polymerisation, begun in 1953 :
 Order of initiation reaction in the free radical catalysed solution polymerisation of methyl acrylate has been established.
 Chain transfer constants in twelve different solvents have been determined at 80°C and chain transfer studies at 60°C are being undertaken.
 Studies in chain transfer in mixed solvents are projected.

NATIONAL METALLURGICAL LABORATORY, JAMSHEDPUR

PROBLEMS UNDER INVESTIGATION

Production of Nodular Cast Iron and a Study of Nodularisation.

Study of the Properties of various foundry moulding sands.

Preparation of Aluminised Steels.

Preparation of Al-Si alloys by Direct Thermal Reduction.

Direct Reduction of Iron Ore to Yield Variable Density Steels.

Study of Abnormality in Al-bearing and Alloy Steels through Pack and Gas Carburisation.

A Study of the Properties of Metal Powders.

A Study of Austenite Decomposition — Bainite Reaction in Steels.

Study of Austenitic Grain-size Control in Plain Carbon and Alloy Steels.

Semi-pilot Plant for production of Electrolytic Manganese.

Further Studies on the Deposition of Metals on Non-metals with Nickel as the bonding layer.

Further Studies on Brass Plating from Non-cyanide Baths.

Plating on Aluminium and Aluminium Alloys.

Reduction of Manganese Dioxide by Glucose, Molasses, Sawdust etc., in the presence of 2% Sulphuric Acid.

Electrolytic Separation of nickel from Silver Refinery Waste Liquor.

- (a) Reduction of Titanium Tetrachloride for the Production of Titanium ;
- (b) Electrolytic Preparation of Titanium and (c) Decomposition of Various Titanium Salts under Vacuum.

Preparation of Zirconium metal.

High Temperature Electrolysis of Lead Sulphite for recovery of Elemental Sulphur.

Rapid Method for the Estimation of Beryllium in Beryl.

Analytical Method for the separation of Titanium from Iron and other metals.

Beneficiation of low-grade Graphite Ore (Plumbago 'A' Quality).

Beneficiation of low-grade Manganese Ore from Tirodi Mines, Madhya Pradesh.

Concentration of Germanium from Lead-Zinc Ores.

Beneficiation of low-grade Uranium Ores.

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Flotation properties of Manganese Minerals.

Basic Refractories :

- (a) Production of Dolomite Refractories.
- (b) Investigation into suitability of Indigenous Magnesium Silicate Rocks for the Production of Basic Refractories (Part II).
- (c) Production of Magnesite Refractories (including chemically bonded and metal clad).

Alumino-silicate Refractories.

Insulation Refractories.

Carbon Refractories.

Graphite Refractories.

Silicon Carbide Refractories.

High Temperature Air Corrosion of Some Manganese-Aluminium Steels.

Electrical and Magnetic Properties of some Low-Manganese, Low-Aluminium Steels.

X-Ray Study of the Mechanism of Fatigue Cracks.

Effect of the Addition of Tin to Copper on the ' Dihedral Angle ' of Copper Versus Arsenic, Antimony, Bismuth and Lead.

Study of Impact Fatigue Resistance of Structural Steels.

Study of Fatigue Properties of Structural Steels and their Notch Sensitivity.

Study of Wear Resistance of Railway Wheels, Tyres and Rails.

A Study of Upper and Lower Yield Points.

Dynamic Determination of Elastic Constants and their Variation with Temperature.

Study of the Variation of Tensile Properties with Fatigue Cycle.

TATA INSTITUTE OF FUNDAMENTAL RESEARCH, BOMBAY

Mathematics

Ph. D.

- V. Venugopal Rao, Some Analytical Problems in the theory of numbers, begun on 2-5-'53, likely to be completed in 1956.
- K. Balagangadharan, Some problems in fourier analysis, begun on 7-8-'53, likely to be completed in 1955.
- T. P. Srinivasan, Some problems in the theory of functions, begun on 19-12-'53, likely to be completed in 1956.
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- C. S. Seshadri, Some applications of complex analysis, begun on 19-12-'53, likely to be completed in 1956.

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- B. V. Singbal, Some problems in analysis in the large, begun on 4-4-'53, likely to be completed in 1955.

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Ph. D.

- R. V. S. Sitaram, Techniques for high energy electron linear accelerator construction and those for high energy particle detection by coincidence and anti-coincidence methods, Resonance method for measuring attenuation in wave guides, published in Journal Scientific & Industrial Research ('A portable Radiation Monitor') 1949; A.E.R.E., Memo G. M./90 (1951), begun in 1949.
- G. H. Vaze, Liquid Scintillation counter for Cosmic Rays, begun in June, 1952, completed in December, 1953, published in Journal of Science & Industrial Research (1954).
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- D. Sankaranarayana, Cosmic Rays, begun in 1950, likely to be completed in 1955, A paper published in the Proc. in Acad. of Sci. Vol. XXXVII, 1953.
- P. N. Krishnamoorthy, Nuclear Emulsion studies in cosmic rays and nuclear physics, begun in August, 1950, likely to be completed by about the end of 1956, part of the work has been published in Proceedings of the Indian Academy of Sciences, Vol. 36, p. 41, 1952 under the title 'High Altitude Balloon Experiments and Measurement of the heavy Primary Radiation Flux at the Geomagnetic Equator.
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